ECIAL REPORT
ed butt-welding plants

Ballast 'harvested' with mechanized rake
p. 30

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g freighthouse
s barrel-shell roof
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STRUCTURES

June 1960

A Simmons-Boardman TIME-SAVER Publication

This secondary line track of the Western Maryland Railway was treated with Du Pont "Telvar" at 15 lbs./acre in combination with other weed killers. Note the type of vegetation nearby and the sharp contrast beyond treated area at right.

Keep roadbeds clean all season long ... base your weed program on Du Pont Weed Killers

To clean up weeds and grass on your roadbeds and rights-of-way effectively and economically, use Du Pont "Telvar" monuron or "Karmex" diuron weed killers—either separately or in combination with other weed killers. Just one application of these herbicides controls weeds for a season or longer, cuts maintenance costs considerably. And both provide long-lasting residual action that often permits lower application rates in succeeding years. "Telvar" and "Karmex" are easy-to-mix wettable powders—and are non-flammable, non-volatile, non-corrosive and low in toxicity to man and animals.

Choice of "Telvar" or "Karmex" depends on soil types and moisture conditions. For information on which one meets your requirements best and assistance in maintaining an effective, low-cost weed control program, write: Du Pont, 2543 Nemours Bldg., Wilmington 98, Delaware. In Canada: Du Pont of Canada, Ltd., P. O. Box 660, Montreal, P.Q.

On all chemicals, always follow label instructions and warnings carefully.

DU PONT
REG. U. S. PAT. OFF.
BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

Weed and Brush Killers

TELVAR® monuron weed killer · **KARMEX®** diuron weed killer · **AMMATE® X** weed and brush killer · **TRYSBEN® 200** weed killer · **DYBAR®** fenuron weed and brush killer

This stubborn little brace won't give an inch

The Bethlehem Model 811 Rail Brace won't give an inch when rolling stock and straining switches put the pressure on!

Sound design is the secret of the success of this steadfast little brute. Note that the bracing part is welded solidly to the plate on which the rail rests. Driven snugly between the brace and rail web is a sturdy forged wedge containing an angular spring steel piece which can take a compressive force of 20,000 lb. Slippage is virtually prevented by the compression alone.

But just to sew things up, the Model 811 has two pawls which are turned down into slots in the wedge, locking it into place. The pawls make positive adjustment easy: just disengage them, move the wedge to right or left, then re-position the pawls in the slots. Adjustments can be made in 1/16-in. increments.

There may very well be switches on your system which the Model 811 Spring Rail Brace can brace up. A Bethlehem engineer will be glad to check these points with you and explain the 811 in full detail.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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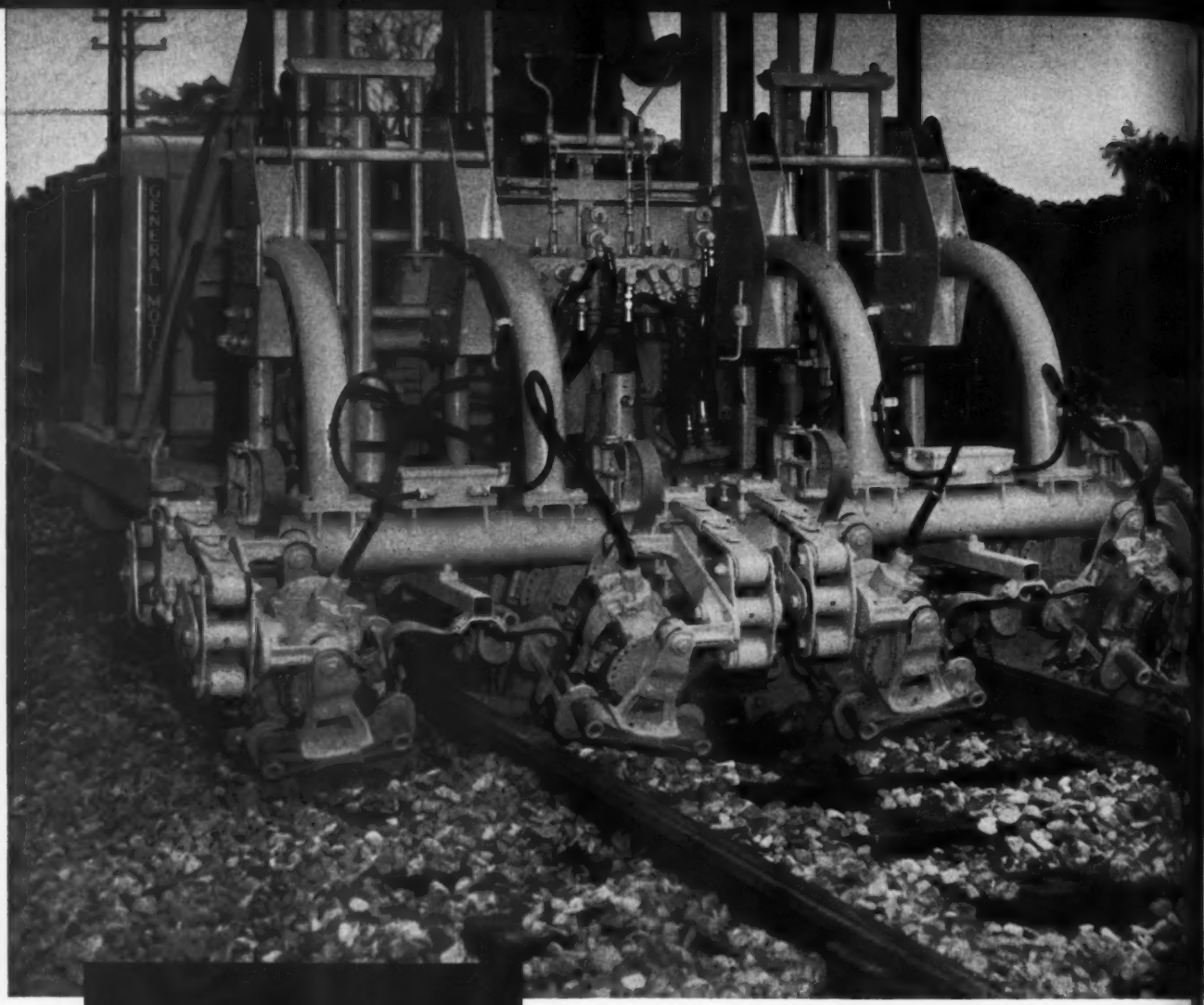

THE JACKSON TRACK MAINTAINER

To enjoy such OUTSTANDING preferen
IT'S BOUND TO BE BETTE

Throughout the nation there are more JACKSON TRACK MAINTAINERS in use than all other machines in this category combined. And since equipment of this kind is purchased only after most careful comparison and investigation of actual performance, what could more forcefully indicate the true superiority of the JACKSON MAINTAINER.

The 1960 MODEL is even more powerful and faster than its predecessors. It also incorporates a number of other important mechanical improvements which further widen its margin of superiority. Write, wire or phone for the complete information, and judge for yourself.

Attractive acquirement plans

JACKSON VIBRATORS, INC.

LUDINGTON, MICHIGAN

Railway TRACK and STRUCTURES

JUNE

1960 • Vol. 56, No. 6

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Butt-welding plants at rolling mills 23
Outlines the reasons for this development and explains its significance for the railroads, the welding companies and the steel producers.

Mechanizes repairs to road crossings 27
Describes how the New York Central is using a special mechanized outfit to rehabilitate road crossings ahead of tie-and-surfacing gangs.

Recovering additional ballast from old roadbeds 30
The D&H is using a mechanical scarifier and rake to 'harvest' a second 'crop' of stone from the roadbeds of abandoned second tracks.

Barrel-shell roof for big freighthouse 32
Describes the Union Pacific's new freighthouse at East Los Angeles. It's said to be the largest barrel-arch concrete structure in the west.

Hydraulic tester cuts downtime of M/W machines 34
Explains how mechanics on the PRR are using portable testers to quickly locate trouble spots in the hydraulic systems of work equipment.

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◀ Don't miss . . .

The Milwaukee used rippers and other earthmoving equipment to excavate a tunnel floor in half the anticipated time. Purpose of the work was to lower the track through the tunnel to eliminate restrictive clearances.

. . . in the July issue

"And, at the recommendation of our two most traveled passengers, I hereby move that Chipman Weed Killers be used on our railroad."

A broad line of Chipman weed, grass and brush killers is available. Each is formulated to solve specific vegetation control problems. Most widely used are these trade-name products:

Atlacide • Atlas "A" • Chlorax • Chlorea • Methoxone-Chlorax
TCA-Chlorax • Methoxone-Chlorea • Chipman Brush Killer

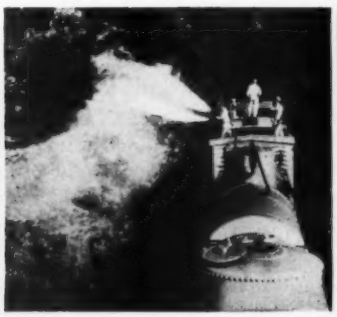
These chemicals, as well as our special application service and equipment, are backed by almost a half century of extensive railroad weed control experience.

Let us solve *your* weed problem with the *right* chemicals and application service. Your inquiry will receive prompt attention.

CHIPMAN
Chemical Company, Inc.

BOUND BOOK, NEW JERSEY

World Leader in Chemical Weed Control Since 1912



CONTINUOUS RAIL PRE-WELDED AT THE MILL!

–A new "RIBBONRAIL" service from LINDE...

NOW YOU CAN HAVE "RIBBONRAIL" welded rail delivered right to trackside from the mill. No capital outlay . . . no operating problems . . . no skilled personnel taken from other jobs. Rail arrives ready to be laid.

LINDE is installing a contract welding plant in Harrisburg, Pennsylvania, near the Steelton Mill of Bethlehem Steel Company. Additional plants will soon follow. These plants will employ the famous "RIBBONRAIL" process of oxy-acetylene pressure welding—recognized for over twenty years as the top quality rail welding process—and used by over forty major railroads. For a single, predictable contract price, you can get rail welded in the lengths you need, and as you need them. Facilities will also accommodate the welding of relayer rail.

For details on the new contract welding arrangements, write to Oxweld Railroad Department, Linde Company, Division of Union Carbide Corporation, at either of the following locations:

270 PARK AVENUE
NEW YORK 17, N. Y.

230 N. MICHIGAN AVENUE
CHICAGO 1, ILLINOIS

In Canada: LINDE COMPANY
DIVISION OF UNION CARBIDE CANADA LIMITED
TORONTO 7, CANADA.

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Department

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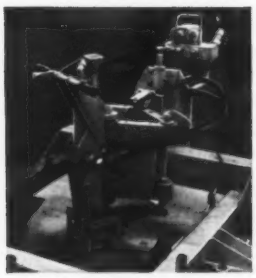


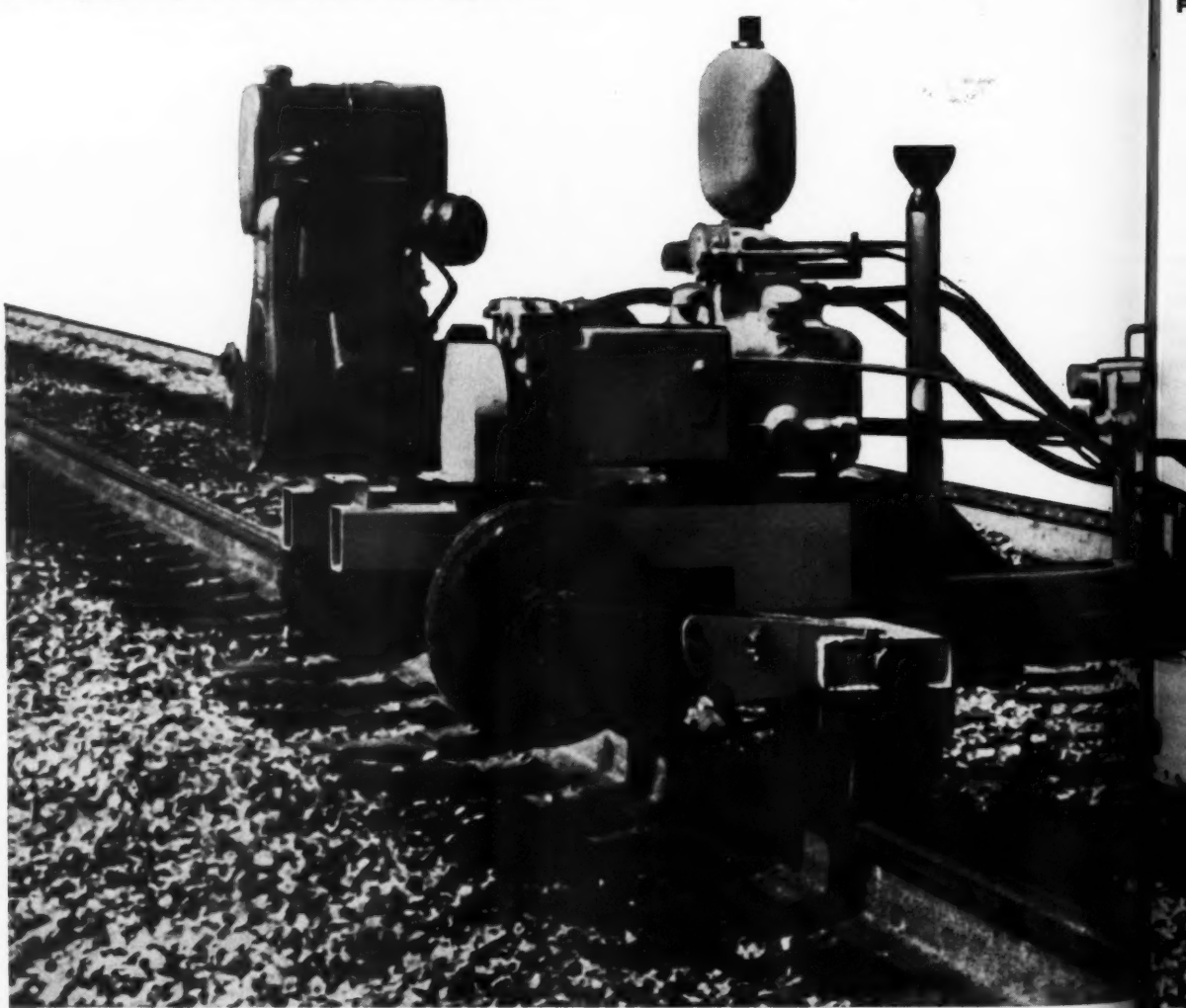
FAIRMONT

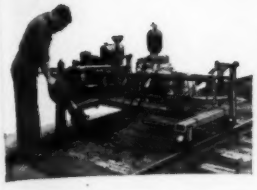
Announcing . . . the first mechanical TIE PLUG INSERTER

Speed up your rail renewal program, and cut the cost of manually plugging old spike holes, with the new, self-propelled Fairmont W104 Tie Plug Inserter—the industry's first mechanical device for setting and driving tie plugs.

Compare the savings in time and money between slow, manual tie plugging, and the new split-second, mechanical method. Plugging three holes per tie, one man and the Fairmont W104 can insert 38 to 40 tie plugs in just one minute. And compare the difference in workmanship quality between plugs set and driven by hand . . . and plugs set and driven to a uniform depth with one strong hydraulic blow of the Fairmont W104.

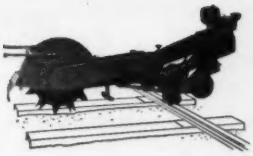
Any way you compare it, the new Fairmont W104 Tie Plug Inserter can save you money and man-hours—and give you a better job in the bargain! Plan now to put the Fairmont W104 to work with your rail gangs. Call or write for full information.

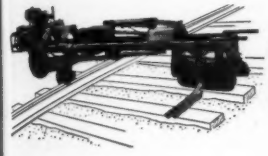




W84 SERIES B HYDRAULIC SPIKE PULLER. Operated by one man, it works both sides of both rails while moving in one direction. Pulls 15 to 20 track spikes per minute.

W89 SERIES A CRIB REDUCER. One man can dig crib ballast for a gang of 50 men. Hydraulically controlled for back and forth, crib to crib movement.





W88 SERIES B TIE BRUSH. One-man operation. Power-driven wire brush is positioned to sweep area under and adjacent to tie plate.

W71 SERIES A TIE SPRAYER. Fast, economical automatic spray coater for protecting newly adzed tie surfaces. Operated by one man.

FAIRMONT RAILWAY MOTORS, INCORPORATED • FAIRMONT, MINNESOTA

NEWS ABOUT PEOPLE

ATLANTIC COAST LINE—H. H. Hill, general superintendent at Savannah, Ga., has been promoted to general superintendent maintenance of way with jurisdiction over the entire system. Mr. Hill will maintain headquarters at Savannah until July 1960 at which time he will be transferred to Jacksonville, Fla., concurrent with the transferral of the general office to that city.

CANADIAN NATIONAL — F. L. Peckover, soils engineer at Montreal, Que., has been promoted to engineer of soils and foundations-system there.

CANADIAN PACIFIC—J. H. Flett, roadmaster at Woodstock, Ont., has been promoted to division engineer at Toronto, Ont., succeeding **J. R. Nutter,** transferred.

CHESAPEAKE & OHIO—G. H. Chabot, assistant engineer at Richmond, Va., has been promoted to assistant to chief engineer, also at Richmond, succeeding **George K. Davis** who retired recently after 50 years of service.

DELAWARE & HUDSON—J. P. Hiltz, Jr., vice president in charge of operations and maintenance, Albany, N. Y., and formerly chief engineer, has been elected a member of the board of managers of The Delaware & Hudson Co. and of the board of directors of The Delaware & Hudson Railroad Corp.

DENVER & RIO GRANDE WESTERN—The following promotions have occurred recently: **Kenneth Jacobsen,** office engineer, to assistant engineer at Denver, Colo.; **M. T. Ruckman,** engineering assistant, to assistant engineer at Grand Junction, Colo.; and **Chad R. Chestnut,** engineering assistant, to office engineer at Denver.

ILLINOIS TERMINAL—E. A. Roth, assistant chief engineer, St. Louis, Mo., has been promoted to chief engineer there, succeeding **J. L. Loida** who has retired after 48 years of railroad service.

LOUISVILLE & NASHVILLE—A. P. Fish has been promoted to assistant division engineer at Evansville, Ind., succeeding **J. B. Sellers,** promoted.

MILWAUKEE — R. F. Kerfoot, supervisor work equipment at Chicago, has been promoted to field supervisor work equipment, system, with headquarters remaining at Chicago, succeeding **R. W. Hayes** who retired on April 30 after more than 42 years of service.

MISSOURI PACIFIC—J. V. Utley, roadmaster at Little Rock, Ark., has been promoted to general roadmaster and assigned supervision of track construction at the automatic retarder classification yard at North Little Rock, Ark.

NEW YORK CENTRAL—Thomas F. Maloney, Jr., assistant division engineer at New York, has been promoted to resident engineer there. **H. C. Walker,** supervisor track at Welland, Ont., retired recently after 43 years of service.

J. P. Hiltz, Jr.
D&H

W. H. Bechman
Athey

PIEDMONT & NORTHERN—George Wilson, Jr., has been appointed assistant to chief engineer.

SEABOARD—J. K. Carpenter, assistant roadmaster at Savannah, Ga., has been promoted to roadmaster at Tampa, Fla., succeeding **L. E. Hardin** whose death is announced elsewhere on this page.

SOUTHERN PACIFIC—Henry K. Koberstein, assistant division engineer at Portland, Ore., has been promoted to division engineer there, succeeding **C. T. Ray** who has retired after more than 40 years of service. **James W. Lynch, Jr.,** has been appointed assistant division engineer at Portland, succeeding **D. B. Zumwalt** who has been promoted to senior assistant division engineer, also at Portland.

WESTERN PACIFIC — Myron K. Anderson, roadmaster at Keddie, Cal., has been promoted to assistant division engineer at Elko, Nev., succeeding **A. P. Schmitt,** deceased.

Obituary

L. E. Hardin, roadmaster on the Seaboard Air Line at Tampa, Fla., died suddenly on April 19.

Supply trade news

ALLIED CHEMICAL CORPORATION—John L. Damon, agricultural chemical sales manager, has been promoted to director of agricultural chemicals of the General Chemical Division, according to an announcement by **Frank J. French,** president. **Frank J. Woods,** heavy chemical sales manager, has been promoted to director of sales for the General Chemical Division, according to an announcement by **James P. Farrell,** vice president.

AMERICAN BRAKE SHOE COMPANY—Calvin E. Smith, sales representative for the Railroad Products Division at Chicago, has been promoted to district sales manager for the division at Houston, Tex., according to an announcement by **Stephen S. Conway,** president of the division. Mr. Smith will be responsible for sales in the southwestern area of the United States.

ATHEY PRODUCTS CORPORATION—Will... H. Bechman has been appointed chief engineer, with headquarters at Chicago, according to an announcement by **Ben F. Leon...** president. Mr. Bechman will be responsible for all engineering for the company's line of pneumatic-tired, off-highway trailers, force-feed loaders and Forged-Trak equipment. He will also be in charge of Athey's accelerated development program for new equipment for the railroad, heavy construction, mining and industrial markets.

BUCYRUS-ERIE—The Cate Equipment Company, Salt Lake City, Utah, has been appointed distributor for this company's line of crane-excavators and Hydrocranes in Utah, southwestern Wyoming and northeastern Nevada.

The territory assigned to **Contractors Supply,** Kansas City, Mo., and Springfield, has been enlarged to include 22 additional counties in northwestern Missouri and the county of Doniphan in Kansas.

A. M. BYERS COMPANY—Blake Ward has been appointed manager of the St. Louis division, with headquarters at St. Louis, Mo., succeeding **Walter B. Simpson,** retired.

DEARBORN CHEMICAL COMPANY—Glen L. Pierce has been appointed manager of the newly created distributor sales division.

EATON MANUFACTURING COMPANY—Ronald A. Patt, advertising and sales promotion manager, has been promoted to manager—Springtite sales and service Department, Reliance Division, according to an announcement by **R. B. Little,** general sales manager of the division. His new duties include customer service for all sales territories. **John L. Knott** has been appointed sales engineer for the Reliance Division with headquarters at St. Louis, Mo. In his new position he will be responsible for customer service in Missouri, Kansas, Mississippi, Alabama, Louisiana, Tennessee, Nebraska and Arkansas.

INGERSOLL-RAND COMPANY — Joseph A. Wiendl, assistant general manager of sales, has been promoted to general manager of sales, according to an announcement by **Robert H. Johnson,** chairman of the company.

D. W. ONAN & SONS, INC.—Lloyd Friend, assistant manager of technical publications, has been promoted to manager of technical publications, succeeding **Curt Ashenbach** who has been promoted to the newly created position of manager of customer services, according to an announcement by **Roy E. Mullin,** vice president-sales. In his new capacity, Mr. Ashenbach will direct the parts, service and technical publications department, including the office supplies, printing and addressograph sections. **Gerald Stano** has been appointed manager of the parts department, succeeding **Warren Mickus,** deceased.

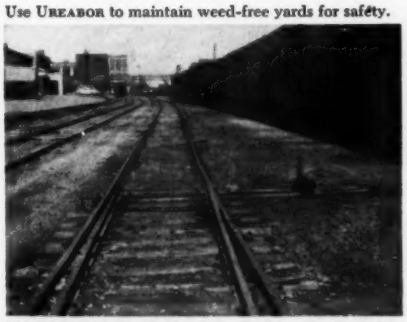
(Continued on page 54)

You can bet your budget dollars...

UREABOR stops weeds

A low rate of application effectively destroys weeds and grasses... prevents regrowth. Easy to apply...nothing to mix...no water to haul. Nonflammable, noncorrosive, nonpoisonous when used as directed.

Use UREABOR to maintain weed-free yards for safety.



UREABOR protects trestles from fire-hazardous weeds.

Use of UREABOR keeps signal areas clear of weeds.

You can maintain weed-free areas anywhere at low cost, with the least amount of labor, by choosing UREABOR weed killer for the job... *that's a proven fact!* But you get other benefits too! Service, for instance. Only capable, experienced field personnel promote the sales of UREABOR. They can stretch your budget dollar for weeds because each man is thoroughly trained to solve every specific weed problem. You get sound advice, backed up by years of field experience, on how to make the most efficient use of our herbicide material. You also have a choice of hand-operated or power-driven mechanical spreaders. Equipment specifically designed to apply UREABOR to best advantage and to fit into every field use.

As you may know, U. S. Borax & Chemical Corp. pioneered the field of dry herbicides... with particular emphasis on railroad requirements. Continuing research over the years has yielded our successful scientifically formulated herbicides. Each gives outstanding results on vegetation... each makes use of the proved plant-destroying action of borates. So, for *your* weed problems, get the right answers. Get in touch with us today to get the *most* for your weed-killer dollar!

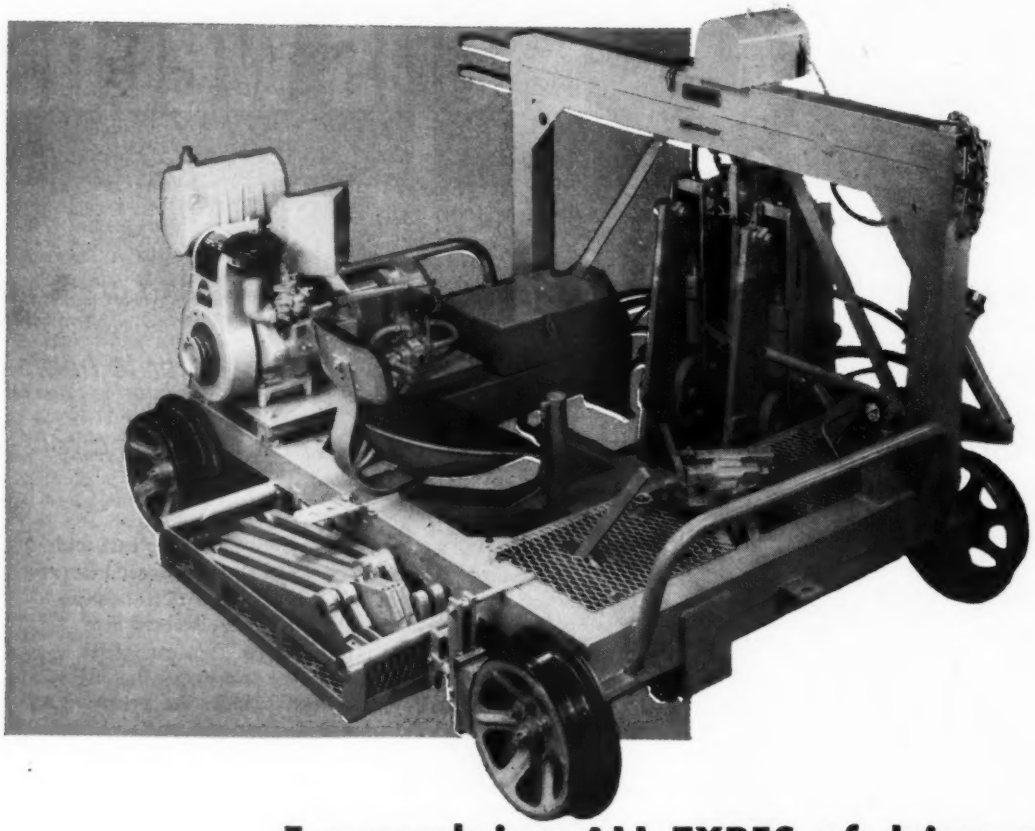
UNITED STATES BORAX & CHEMICAL CORPORATION

630 Shatto Place, Los Angeles 5, California

RACINE

Hydraulically operated

"Anchor Fast" ANCHOR APPLICATOR



For applying ALL TYPES of drive-on or tool applied hang-on anchors

The only machine, of its kind, in the field. The "Anchor-Fast" is hydraulically controlled and self-propelled. Maximum speed 15 mph. Unit is powered by a hydraulic jack cylinder for "off track" movement or can be revolved 180° for work on opposite rail.

CONSTRUCTION AND OPERATION FEATURES

- Smooth hydraulic pressure with adjustable stops, prevents over driving.
- Positive anchor-to-tie application.
- Machine can be used for either single or box anchoring.
- Powered by a 9.2 hp gas engine with clutch and reduction gear.
- Size of unit—95" x 75" x 56". Wgt. 2300 lbs.

RACINE SECO

RACINE HYDRAULICS & MACHINERY, INC.

Machinery Division **Racine, Wisconsin**

Railway TRACK and STRUCTURES

NEWS NOTES . . .

. . . a résumé of current events throughout the railroad world

Because both the BLE and the railroads agreed to a time extension, the binding award in that wage dispute is now due on June 10. Carrier testimony in the arbitration hearings was completed in mid-May. The railroads have proposed a 15-cent-an-hour wage cut to counter union demands for a 12-per cent increase. Meanwhile, an emergency fact-finding board conducted hearings on the non-op wage and fringe benefit dispute. As this issue was going to press, that board's recommendations were expected by May 26, unless both parties to this dispute agreed to an extension of the date.

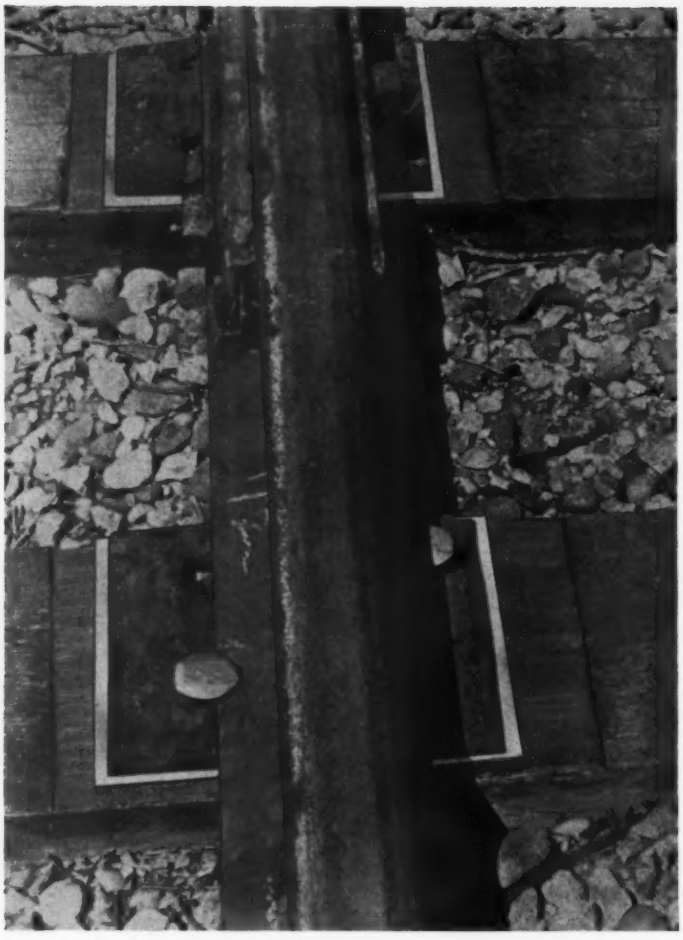
Class I railroads' net income for the first quarter of this year is estimated at $99 million by the AAR—compared with $100 million in 1959's first quarter and $34 million in 1958. Thirty-three Class I roads failed to earn their fixed charges in the first three months of 1960. Estimated net income in March was $44 million, compared with $58 million a year ago. In the 12 months ended March 1960, the rate of return averaged 2.70 per cent.

Asphalt-treated roadbeds will be tested this year by the Norfolk & Western, Monon, Louisville & Nashville, Chicago & North Western, and the Texas & Pacific, according to the Asphalt Institute. The Pittsburgh & West Virginia and the Rock Island plan asphalt treatment of timber bridges. The Santa Fe, which treated 25 miles of roadbed with asphalt last year, may extend its experimental program this year, said the Institute.

Six major railroads have installed audio frequency overlay (AFO) track-circuit equipment at eight highway crossing installations. AFO equipment eliminates the need for insulated track circuits for crossing protection devices. This offers special economic advantages in welded-rail territory because the cutting of the long rails is avoided.

A good year is seen by the Value Line Development Survey for the railway equipment and supply industry for 1960. However, sales and profits will not show as wide gains as had been previously hoped, the Survey said. The slow-to-develop upswing in railroad traffic has caused postponement of some planned capital-budget projects, it added.

An end to all transportation subsidies, imposition of user charges on those who benefit from public-provided transportation facilities, and a fundamental overhauling of the ICC were urged by Secretary of Labor James P. Mitchell. He advocated joint rail labor-management recommendations calling for "a fundamental overhauling of the Interstate Commerce Commission and the laws that govern transportation . . . so that Federal regulation produces equality of competition and not an index to the competition of yesterday."



get bonus years of tie service

Preserve vital underplate wood with PROTEK-TIE SEALS* at amazingly low cost of 18¢ per seal

For a mere fraction of the cost of other tie preservers, Protek-Tie Seals give you a complete and permanent seal of underplate wood—positively keeping out moisture, abrasives and rust.

After five years' exposure to heavy traffic, examination shows spikes, plates and rails securely anchored—absolutely free of play with no evidence of cutting—conclusive proof of the ability of Protek-Tie Seals to keep underplate wood sound. Tests further indicate a service life expectancy up to 50% longer with Protek-Tie Seals.

The low cost of Protek-Tie Seals, plus the ease and speed of installation, make them a most practical investment for any and all trackage.

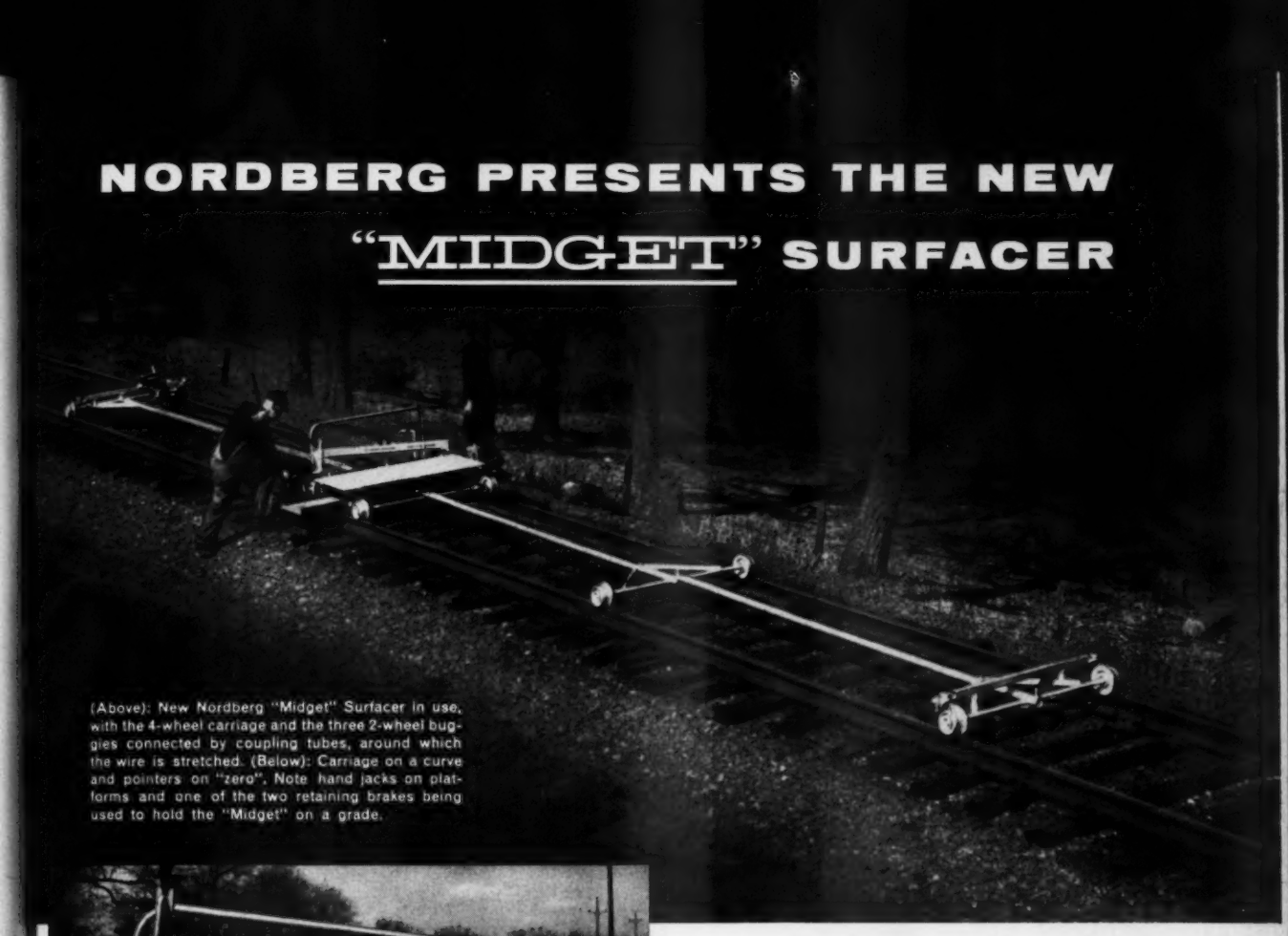
For full particulars, write or phone

DAUBERT CHEMICAL COMPANY

4700 South Central, Chicago 38, Illinois — LUdlow 2-1000

*Patent Applied for

NORDBERG PRESENTS THE NEW "MIDGET" SURFACER



(Above): New Nordberg "Midget" Surfacer in use, with the 4-wheel carriage and the three 2-wheel buggies connected by coupling tubes, around which the wire is stretched. (Below): Carriage on a curve and pointers on "zero". Note hand jacks on platforms and one of the two retaining brakes being used to hold the "Midget" on a grade.

WIRE REPLACES HUMAN JUDGMENT AND ELIMINATES VISUAL ERRORS

. . . here's what the "Midget" Surfacer does:

- Smoothin' . . . locates and corrects irregular surface.
- Locates and corrects minor surface irregularities after jacking and before tamping in a track raising operation.
- Locates and corrects settlement irregularities following ballasting of high lifts.
- Analyzes the quality of track surface.

The new Nordberg "Midget" Surfacer eliminates human error and guesswork by utilizing a 50-ft. length of tautly drawn wire over each rail to locate and correct low spots in track surface. It is made up of a 4-wheel carriage and three 2-wheel buggies. Two pointers are employed, one for each rail. One end of each pointer is in constant contact with its wire, and the other end moves over a graduated scale which is mounted on the carriage over the center of the track.

As the lightweight "Midget" is pushed along the track, the two pointers are observed. If the surface is perfect, these pointers will constantly indicate "zero" on the pointer scale. As low spots are encountered in either rail, the individual pointer will move below "zero". In this way, each rail is analyzed independently of the other.

When a low spot is found, the "Midget" is moved back and forth to locate the lowest point, and a hand jack is then inserted at this spot and used to lift the track until the pointer reading is corrected. A tie adjacent to the hand jack is tamped manually to hold this correction. Suitable tamping means are then employed to tamp all ties at the corrected spot.

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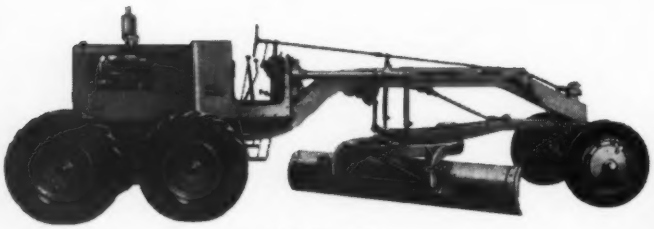

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MODERN HEAVY-DUTY MACHINES TO FIT ANY JOB!

Land for sale

A cartoon entitled "which is your road?" could be drawn to depict diverse land situations on two railroads. One would show a railroad operating over two main tracks located on a right of way two rods wide. The other would show another railroad maintaining a single track on a right of way 500 ft wide. These situations are far from being unusual.

It is true that extensive widths are necessary under certain conditions. Where embankments are high or where cuts are deep, wide strips are required. Extra width also is needed for intercepting ditches in cuts, for drainage ditches at the toes of embankment slopes, and for added protection where rivers lap at the foot of fills. Also, railroads often retain extra widths of property through towns for industrial purposes.

Yet, a traveler can point to countless locations where right-of-way widths are far in excess of present or future needs. Why should a railroad hold on to this property?

In many locations the extra width was acquired for borrow-pit purposes. But even in most of these instances the land is dry enough to be tillable or to be of some other use to the adjacent land owner.

If railroad property were to be taxed on the acreage basis instead of mileage basis, there would be a mad scramble to get rid of the excess property. Without this incentive, few officers are prone to make the effort to dispose of the land because maintenance costs are not prohibitive.

Yet, it would appear that the sensible thing to do would be to investigate the matter, sell the excess property and thus get rid of its maintenance and also gain some cash to work on some needed improvements.

The need for more scientific inspections

How much longer will it last? Should it be renewed this year? Next year? Is it safe in its present condition? If so, how much longer will it continue safe before major repairs or complete renewal becomes necessary?

Railroad maintenance men have been asking themselves such questions for more than a hundred years. To a very large extent their answers have been based on personal experience and judgment. A bridge inspector determines the condition of a wood bridge by an inspection that includes a general examination of the structure and a closer scrutiny of vulnerable points. He may tap here and there with a hammer or other tool and he may take increment borings to determine the internal condition of suspicious members. In the end he applies his judgment to what he has found and comes up with a decision regarding whether the bridge is in need of repairs or replacement.

The methods used to determine the condition of steel bridges are not vastly different. And the same general procedure is followed when inspecting crossties, rail, buildings and other items of railroad property.

There is no question but what those responsible for making these inspections and for arriving at decisions based on them have, as a rule, developed the faculty of judgment to a high degree. Still they would be the first to admit that judgment based only on a visual and physical inspection has its limitations. All that is necessary to illustrate this point is to raise the question to what extent two inspectors, going over the same stretch of track at different times, would mark the same ties to come out.

Since personal judgment is an inexact method of determining the condition of a structure it is to be expected that those making such determinations would lean toward conservatism. Which means that structures could be docketed for repairs or renewal long before such work is actually necessary.

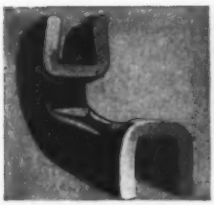
Recently a railroad dismantled an old trestle that was considered ready for renewal and tested some of the members in the laboratory. The engineers making the tests were amazed to find how much load-carrying capacity remained in members that were badly decayed.

Recognition of the shortcomings of present methods has led to a search for more scientific means of determining the condition of railroad structures. For example, several experimental devices using nuclear energy have been developed for determining whether internal decay is present in crossties. Also, it is a fairly common practice these days to use strain gages to measure the stresses developed in track and steel-bridge members under load.

In an apparent attempt to put decisions regarding rail renewals on a more scientific basis the C&O conducted a study of rail wear with the help of its Univac. As a result the road reportedly expects to save considerable money in rail-replacement costs.

These are all steps in the right direction. Personal judgment will always have a place in making decisions regarding what should be done about repairing or renewing railroad structures. But who will not welcome the support of scientific methods in arriving at those decisions?

HERE'S NEW GRIPPING POWER...



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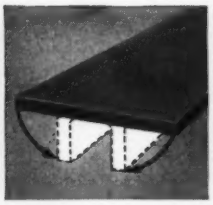
Double flange for wide striking surface. Channeloc is easy to apply with sledge, maul or machine—no skewing.

Channeloc is 100% tie-bearing with generous contact surface. Won't disturb tie plates, as it doesn't touch them.



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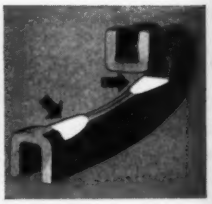

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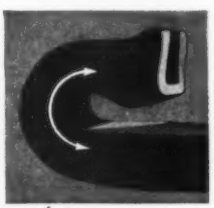

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11-ton Rail-Roader carrier is BANTAM-built for lasting service. [illegible] 15" x 6" box-beam frame assures rigid stability on heaviest lifts . . . rugged 6 x 6 drive offers maximum traction on track or off. The same unique dolly-wheel principle as featured on the 8-ton Rail-Roader eliminates derailing danger when crossing switches, road crossings, etc. Truck tires ride on the rails, on the ties or suspended in the air—eliminating binding and tearing, and giving greater stability, traction and safety at all times.

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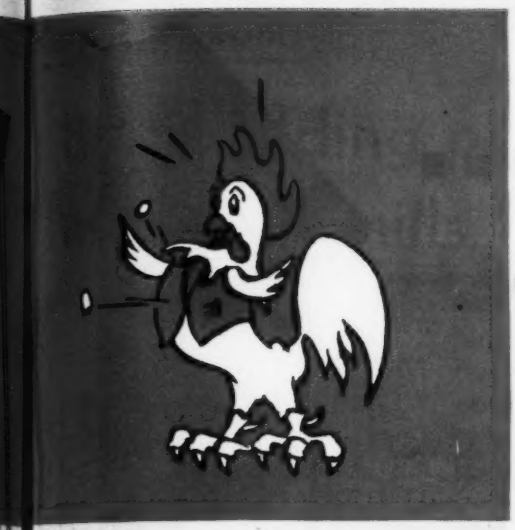

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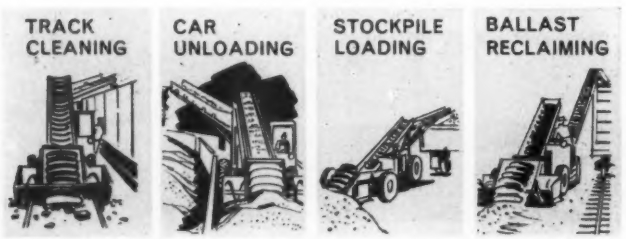

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Special report

Butt-welding plants at rolling mills

. . . are springing up all over the country. Soon nearly every rail mill in the United States will have one or more fixed plants in the vicinity for welding rail into multiple lengths. What's behind this development? What significance does it have for the railroads? The welding companies? The steel producers? Some of the answers, based on interviews with persons close to the situation, are given here. Observers say more experience with the fixed plants is needed before their place in the industry can be accurately evaluated and a pattern of ideas emerges.

Welded rail to hit peak this year

The installation of welding plants close to rail-rolling mills has been accompanied by a sudden spurt in the use of multiple-length rail.

Long rails began to be laid in significant quantities in 1955. In that year, 266.5 track-miles of rail, or about 12 per cent of the new rail laid by Class I railroads, were welded into long lengths. In 1956, the Santa Fe, convinced of the economies offered by welded rail, decided to standardize on the practice of welding all new rail. This faith in welded rail apparently encouraged other roads to adopt it, for in that year the percentage of welded rail to all new rail laid by Class I roads rose to 37.5. In 1959, it went up to 45.5.

In 1960 there will be another sharp increase. More welded rail will be laid this year than ever before and many railroads will be laying it for the first time. From the quantities of rail ordered with undrilled ends for 1960 delivery, a steel-industry spokesman estimates that 60 per cent of the new rail laid this year will be welded. If this estimate is correct, approximately 1,850 track-miles of the 1960 new-rail programs will be welded into long strings.

● A year ago there were no fixed butt-welding plants in existence near rolling mills for converting 39-ft rails into multiple lengths. Today there are six such plants in operation or in process of construction (see table), and others are under consideration.

An entirely new element has thus been introduced in the efforts of the welding companies to help meet the rapidly expanding demand for butt-welded rail (see left). Previously, railroads that wanted butt-welded rail could obtain it in two ways. One was to have the welding done under a lease or lease-contract basis by a mobile plant established on the particular road for the time required to do its welding for that year. Under this plan the welding company furnishes only key personnel, such as supervision and, in some cases, welder operators, with all other labor required being provided by the railroad.

Or a railroad could purchase a plant outright, establish it at a strategic point on the property and produce welded rail with its own forces. Obviously, this plan was available only to those railroads that feel they have a sufficient amount of butt-welding work to justify the investment required to purchase a plant.

A third method of obtaining butt-welded rail is now afforded by the availability of fixed welding plants near rolling mills. Welding work is done at these plants on a contract basis at so much per weld, depending, in most cases, on the number of welds involved in the contract. No railroad personnel is involved in producing welds under this plan, although a railroad may assign a representative to be present for inspection of the completed welds.

Many questions are raised by this new factor in the butt-welding picture. What are the advantages of welding rails at fixed plants compared with on-line welding? The disadvantages? What about switching charges? Per diem and demurrage charges? What are the loading requirements when

Fixed butt-welding plants now in operation or under construction near rail mills*

Rail Mill	Steel Company	Welding Company	Welder Location
Steelton, Pa.	Bethlehem Steel Co.	Linde Company	Harrisburg, Pa.
Pueblo, Colo.	Colorado Fuel & Iron	NCG Division	Minnequa, Colo.
Gary, Ind.	U. S. Steel	Matisa Railweld, Inc.	Summit, Ill.
Birmingham, Ala.	Tenn. Coal & Iron Div., USS	NCG Division	Ensley, Ala.
Birmingham, Ala.	Tenn. Coal & Iron Div., USS	Linde Company	Ensley, Ala.
Birmingham, Ala.	Tenn. Coal & Iron Div., USS	Matisa Railweld, Inc.	Bessemer, Ala.

*Arrangements have been completed for installation of a Matisa fixed plant near Bethlehem Steel's Steelton rolling mill, with construction scheduled to start in the very near future.

Welding plants at rolling mills cont'd

ABOVE—Shoe is bolted to end of welded rail emerging from Summit (Ill.) plant of Matisa Railweld, Inc. BELOW—Operator's silhouette is outlined by flash of welder.

cars carrying multiple-length rails are handled in interchange? What problems are involved in providing the cars and accessories for hauling the long rails? Finally, what complications, if any, are encountered in scheduling production at the fixed plants?

To get answers to these questions *Railway Track and Structures* interviewed numerous people who were known to be close to the new development. They included officers of the welding companies making the fixed-plant installations, executives of the steel companies at whose rolling mills the plants were being installed, and railway maintenance officers.

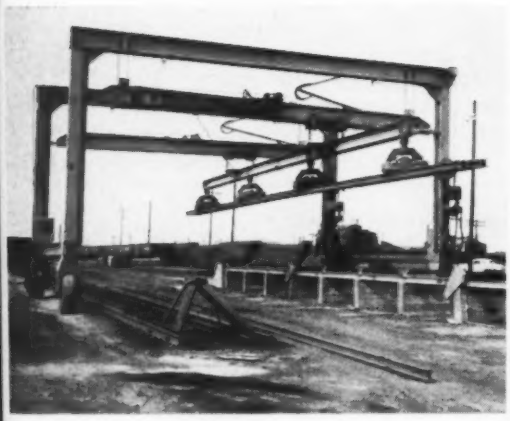
From these interviews, it is apparent that the welding companies and their railroad customers are feeling their way in resolving the many issues and problems encountered in making the new idea work successfully and economically. In the process a full share of growing pains is being experienced. And few can be found who have a clear-cut concept of the ultimate future of this infant industry.

The story began in 1957 when the president of a small midwestern railroad proposed that rail-welding companies establish welding facilities at or near major rail-rolling mills so that 78-ft and longer rails could be shipped from those points.

This suggestion was considered by two AREA committees, the Committee on Rail and the Special Committee on Continuous Welded Rail. These committees canvassed their own membership on the merits of this proposal and also queried the steel companies and the various firms interested in rail welding.

This investigation revealed that, along with the larger companies, many of the smaller railroads were interested in securing welded rail. However, under the then-existing arrangements the smaller roads, as a rule, felt they could not justify the cost of setting up welding plants on their own lines. This factor, along with the increased demand generally for multiple-length rails, ultimately started the trend toward fixed-type welding plants at rolling mills.

The basic reasoning behind the fixed butt-welding plant includes consideration of several factors. One is that welding work done at such plants is not subject to the expenses involved in moving the equipment from one job to another. It also precludes any expenses that might be incurred by the railroad in providing facilities, such as



RIGHT—The Minnequa (Colo.) plant of National Cylinder Gas division, Chemetron Corp., is close to CF&I's mill. ABOVE—NCG's Travelift crane handling 78-ft rails.

loading and unloading tracks, when preparing a site on its property for a mobile welding plant.

Also, since the fixed plant has its own experienced and stable work force under a single supervision, its use relieves a railroad of trying to maintain a suitable working force of its own. Finally, since the fixed plant might be expected to be in operation a greater percentage of the time than a mobile plant, the overhead costs (maintenance, interest on the investment, depreciation, etc.) are spread over a larger number of welds.

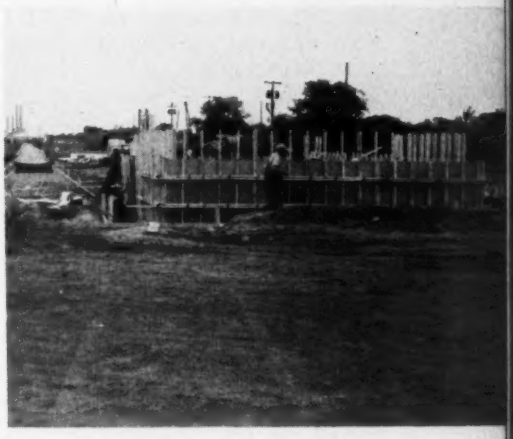
To some extent, however, these plus factors are offset by other considerations. For example, there are switching charges that must be added to the cost of the welds. The effect of these charges can be minimized by loading more than the minimum weight of a car, which usually means placing four tiers or more of the welded rails on the cars.

Per diem and demurrage

Industry representatives point out that another item which adds to the cost of a weld at the fixed plant is the per diem charge for cars from a foreign line while they are being loaded. It is not unusual, they say, for a train of cars to be set out at the fixed plant for seven or eight days while being loaded. During this period the switching road, or the road on which the plant is located, is being billed at the per diem rate of $2.88 for the cars. To recover these charges the road serving the plant must apply demurrage rates against the welding company. It is pointed out that the demurrage charge for eight days is more than 1½ times the per-diem charge, being about $48 per car compared with $29. The fixed plant must either absorb this charge or pass it back to the originating railroad. Either way, the difference in cost will add to the cost of the welds.

The fixed plants are, of course, making strenuous efforts to minimize welding costs. These efforts are taking the form of heavy investments for automation in their operations, double production lines in some cases, two or more work shifts, and a high rate of operations.

Because of the large investments to be amortized it is to be expected that the welding companies are desirous of assuring continued operation of their plants at a relatively high rate. One manufacturer, for example, would like to have the railroads sign five-year contracts with him. In the interest of securing lower unit prices, several railroads have expressed a willingness to sign three-year contracts.



ABOVE—Linde Co. is pushing work on its Harrisburg (Pa.) plant, close to Bethlehem's Steelton mill. Another plant (below) is going up at Ensley, Ala., near TC&I mill.

In their efforts to establish a high rate of operations there is another area in which the welding contractors are seeking railroad cooperation. This has to do with the scheduling of the welding work. If most of the railroads insist upon having their welded rails delivered in the first half of the year, conceivably a plant could be idle during the second half. On the other hand if the railroads agree to have their deliveries spread out over the year, better plant scheduling and lower costs are made possible, say the welding contractors. When informed of this consideration several roads have indicated a willingness to accept delivery any time of the year. Storage of the strings would not, they say, be a major problem.

Since the adjustments required in switching from one rail section to another at the rail-welding plants can be easily made, there is no appreciable saving to be effected by running one section through the plant for a whole month. However, a change in length can add to the cost, say industry spokesmen. Ordinarily, the fixed plant is designed to produce rail lengths up to about 1,500 ft in multiples of 39-ft rails. To produce 78-ft or 117-ft lengths, the plant must handle twice as many rails per weld for the 78-ft lengths and one-third more rails for the 117-ft lengths. Hence, the rates per weld for such lengths are generally higher.

Because of the variation in temperature at the welder and in the field, it is not considered practical to furnish long lengths cut to specific dimensions. If a railroad should want a length that is not a multiple of 39 ft, the welding plant can furnish a length to the nearest full rail over the specified length and the railroad would then do the necessary cutting in the field.

At the time the AREA committees canvassed the railroads for their views on the feasibility of fixed rail-welding plants, the matter of transporting the long lengths was considered by some railroad men as one of the major obstacles to be overcome. However, this problem did not prove unsurmountable.

The usual practice is for the railroad to provide the necessary number of flat cars for its hauling train or trains. It can make its own rollers and

Welding plants at rolling mills cont'd

the center-car hold-down bolster or rent them from the welding contractor and mount them on the cars. The railroad must also lower the staffs of the hand brakes of the cars and block out the drawbar slack action by wedges.

The number of trains that a railroad must equip is influenced by the length of the haul. Ordinarily, the fixed plant has two loading tracks on which to set these trains and can direct the plant output from one to the other.

Frequently, the hauling trains of one or more roads may be idle while waiting delivery of rail from the steel mill. On such occasions, this equipment can be made available to other roads on a per-diem lease basis. This arrangement enables a small road to obtain the necessary hauling and distributing equipment and it gives the owning road some remuneration for what otherwise would be idle equipment. A charge is made from the time that the loading is begun on these cars until they are returned to the welding plant.

There exists a considerable variance in ideas on how the hauling equipment should be provided. Most of those concerned are in agreement that some sort of "car-pool" arrangement would be the best because only a minimum number of cars would then be tied up in such service. The question is, how will the cars get into the pool?

Many of the small roads cannot provide the necessary flat cars even though they can lease the rollers from the welding contractors. For this reason such roads would like to have the welding company provide the hauling trains. On the other hand, the welding contractors are convinced that the railroads or car-manufacturing companies are in a better position to supply and maintain this equipment.

Most of the larger railroads seem reconciled to the idea of providing one or two hauling trains for their own use. If the length of haul should make a third train necessary, they would like to rent one from another road. Also, when there is no immediate use for their own trains, they are, in general, agreeable to leasing them to others.

In view of the greater interest being shown in the welding of secondhand rails what are the possibilities of doing this work at the fixed plants? "We will accept secondhand rails," said one rail-welding contractor, "and inspect, crop, straighten and weld them. In the overall picture there probably will be more of a market and demand for this kind of welding than for new rail."

A representative of another welding contractor stated that he would negotiate separately for the welding of secondhand rails. Where a railroad does its own sorting and cropping, he would insist upon receiving only No. 1 relayers for welding. He also stated he would insist upon having only cleaned rails come to his plant. Some rails, he pointed out, have accumulations of oil and asphalt which make them unacceptable for welding unless they are first cleaned.

Transportation charges over foreign lines are a consideration in connection with the welding of secondhand rails. Another factor is that this rail must be picked up and the sequence of removal maintained all through the loading, sorting, cropping and welding operations to preserve the matching of the rail ends.

What are implications?

What is the significance of the fixed plants from the viewpoint of the railroads? To the small railroad, of course, they mean in many cases the difference between having welded rail and not being able to afford it.

As for the railroads which have been using leased plants, divergent views are expressed. A maintenance officer of one such road states there are several advantages to him in leasing a machine. By having it on his own property, he says, he can weld 78-ft rails, long rails and intermediate lengths at will without any penalty. Also, he claims the cost per joint is less than when the work is done at a fixed plant. He admits, however, that the difference in cost is caused primarily by the extra switching charge incurred in getting the rail in and out of the fixed plant. This man said he is not agreeable to signing a long-term contract with a fixed plant. He is of the opinion that the result would be to stifle the incentive for making plant improvements.

On the other hand, a maintenance officer of another such road is convinced that the welds were costing too much at his leased plant. A considerable investment would be required to modernize the plant, he added. Because of increasing labor rates and the difficulty in keeping the plant manned with qualified men, he said he never knew from one year to the next just how much his welds were going to cost. He has now entered into a three-year contract with a fixed plant. As a result, he says, he now knows just how much his welds are going to cost, the contract price is lower than what it was costing him per joint at the leased plant, and he has avoided the investment required to modernize that plant.

The mushrooming of the fixed plants around the country has stimulated a great deal of thinking among railroad men as to how such plants would fit into their own plans. Because of the newness of these plants, no set pattern of ideas has emerged. These examples of the thinking on two roads illustrate this point:

Starting next year a road which to date has not installed any continuous welded rail in its tracks, has decided to weld all its new rail except that required on heavy curves. It plans to use a fixed plant to weld all rail that is to be laid within a distance of 140 miles from the plant. The remainder of the welded rail will be welded at a leased mobile plant. It is intended to hold the number of hauling trains down to two. The trains will be kept intact and, when not needed, will be leased to other roads.

The other road would like to go still further. It would like to place its order for new rail with the welding contractor, specifying delivery dates. The contractor, in turn, would make arrangements with the steel company for the rolling, testing and delivery of the rail to his plant, where it would be welded. The railroad would furnish only an inspector for passing on the completed welds. The railroad favors this plan because it would be relieved of much detail. The road is also convinced the plan would have advantages for the welding contractor as he could make his own arrangements for coordinating rail deliveries with welding schedules.

For those railroads who wish it, the inspection-service companies already are planning on providing rail-inspection service both at the steel mills and at the fixed welding plants. In most instances, the fixed plants are within easy reach of their present offices near the steel mills.

Mechanizes repairs to road crossings

With other types of track work highly mechanized the New York Central took a hard look at the methods being used to rehabilitate road crossings ahead of tie-and-surfacing gangs. Result: the development of an outfit, built around a rubber-tired crane, that makes it possible to apply machine power to practically all the operations involved in rehabilitating grade crossings. The payoff comes in the form of substantial savings in the cost of doing the work.

● On the New York Central four men can now accomplish as much grade-crossing repair work in 7 hr as eight to ten men formerly did in two days.

This increase in production has been made possible, say NYC engineers, by the new, specially designed outfits that have been developed for rehabilitating grade crossings in advance of tie-and-surfacing gangs.

A pilot model of the new equipment was first tried out on the NYC in 1958 and 1959. Improvements suggested by this experience were incorporated in the design. Since then the NYC has purchased six of the outfits, and the pilot model is now being revamped to include the improvements. Plans are to acquire sufficient additional machines in 1960 to give a total of 12.

Principal unit in each outfit is a modified model, known as Model 442 (see accompanying description), of the Pettibone Mulliken Speed Swing. Each outfit includes a dump truck and, in addition, air-powered tamping guns, a pneumatic impact wrench and a pneumatic drill, all carried on the crane. The truck carries the extra buckets for the Speed Swing, as well as hand shovels, picks, ballast forks, lining bars, claw bars and a track jack.

The organization used with the new outfit includes a foreman, a machine operator, a truck driver and a trackman. The usual procedure, when undertaking work on a crossing, is first to set up barricades and then to strip the surface from the crossing. If the surface consists of 4-in planks laid on furring strips nailed to the crossties, the impact wrench is used to remove the countersunk lag screws. Any boat spikes that may have been driven through the planks and furring strips into the ties, are usually pulled when the planks are lifted out. However, if the boat spikes slip through the wood, they are pulled later by the clamshell bucket.

To remove the planks the 18-in clamshell bucket is used, to which the 42-in lips have been bolted. One of the lips is forced down between the rail and one end of the adjacent plank. With the bucket partially open, the other lip catches into the far side of either the first or second plank as the bucket is partially closed. When a grip has been established, the bucket is raised, pulling up the plank or planks within its grasp. This procedure is continued until all planks have been removed. The furring strips

How outfit is used

1 Ditches are of first importance to assure proper drainage of the crossing.

2 Impact wrench is one of several air tools powered by compressor on crane.

3 Planks are removed by taking grip with clamshell and raising boom.

Photo sequence continues

Road crossing repairs cont'd

are then pulled from the ties, also using the bucket.

Sometimes it is necessary to work the bucket back and forth, simulating the action of a bulldog, for tearing loose stubborn planks and furring strips. In extreme cases, the track jack is used to pry up one end of the first plank to be removed so that the bucket can get a good grip. Occasionally, a plank will break where the boat spikes resist pulling as the plank is being lifted up. In this event, lining bars are used to loosen the broken end of the fastened portion, after which the bucket takes a new bite and pulls it out.

The removal of crossing surfaces consisting of wood headers filled with asphalt offers no problem to the machine, according to NYC officers. The lips of the bucket, they say, penetrate easily into the material so that near-capacity loads are the rule.

When a crossing surface has been stripped, the next step is the digging of ditches from the ends of the crossing to main drainage ditches. If the waste material from this operation is not needed for improving the road approaches, it is loaded onto the truck for disposal elsewhere. Any material that has accumulated at the sides of the crossing from previous cleanings is also loaded up and taken away. The result is a crossing with a neat appearance and good visibility.

The next step is to assure adequate drainage through the crossing by digging trenches at the ends of the ties. For this operation, the lips are detached from the clamshell bucket by removing one bolt from each lip. The machine is then driven onto the track so that it is parallel with and straddling the rails. From this position, it uses the 18-in clamshell bucket to dig the trenches. The excavated material is loaded onto the truck for disposal.

4 **Black-top surface at ends of approaches and in intertrack space yields to clamshell bucket. Here material is loaded in truck for disposal.**

5 **Trenches are dug along ends of ties to assure adequate drainage through crossing. Bucket movements are hydraulically controlled.**

Depth of trenches

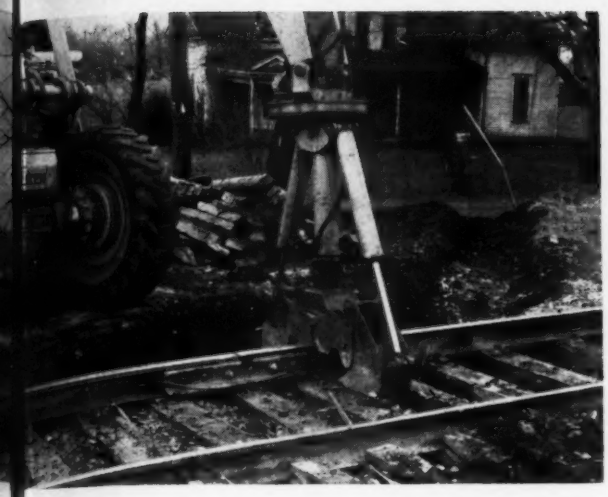
The trenches, if they are to be used as French drains, are excavated to about 4 in below the bottoms of ties. If connecting cross drains are necessary, as in multiple-track territory, they are dug at the ends of the crossing. When perforated-metal pipe is to be laid, the trenches are deepened so that the top of the pipe will be 4 in below the bottoms of ties. When laying the pipe the crossing gang takes care to establish the proper flow line and places the backfill in such manner as to avoid later settlement.

One of the most difficult jobs in rehabilitating a road crossing is the removal of the material in the tie cribs. In the past, because of closer tie spacing than in open track and the ballast being in a cemented condition, the crib material usually had to be loosened by picks, either hand-forked or shoveled out and loaded into wheelbarrows for disposal at the sides of the road approaches.

NYC engineers wanted to incorporate a feature in their crossing machine to remove this compacted material. So a special cribbing bucket, 8 in wide, was devised for the purpose (see box). When using this bucket, the machine takes a position on the track straddling the rails. The bucket normally is set for excavating 4 in below the ties.

The first insertion is made with the center notch of the bucket frame resting on a running rail. In this position, the jaws excavate on each side of the rail but leave the material under the rail. For the next insertion, the bucket is maneuvered so that the inside notch of the bucket frame rests on the rail. This takes out the material at the tie ends and a good portion of the material under the rail. The next insertion utilizes the outside notch of the bucket frame, resulting in the removal of the remaining material under the rail and also the material near the center of the crib. In each of these operations the bucket is maneuvered to permit it to pass the rail. The same procedure is followed on the opposite running rail until the crib has been cleaned out, then the work is continued on the adjacent crib.

After a crossing has been cribbed out, the next step is to backfill the excavations. Ordinarily, a hopper car



6 Cribbing bucket works in tie cribs and excavates 4 in, 6 in and 8 in below bottoms of ties. Notches help bucket reach under rail.

7 Slag ballast is unloaded from hopper car by car unloader and elevated into dump truck. Elevator and unloader are not part of outfit.

of crushed stone is set out at the nearest siding for this purpose. When possible, the car is set on a siding where an industry has an under-car unloader and a portable elevator available. This simplifies and speeds the loading of the dump truck.

The stone is dumped at the crossing, in the trenches where possible or in a convenient stock pile. For handling this material the cribbing bucket is removed from the machine and the 18-in clamshell bucket is substituted, which is used to fill the trenches and cribs with stone.

While the crossing is in the skeletonized condition, the ties are carefully inspected for renewals. Usually, the track supervisor is familiar with the tie condition through the crossings and has the required number of ties on hand for making the renewals. If it is known that the tie-and-surfacing gang will reach the crossing the same day, the tie renewals and the raising and tamping of the track through the crossing are left for the larger gang to do. Otherwise, the crossing gang makes the necessary tie renewals, raises and tamps the track and makes suitable run-offs.

In either case, the crossing gang applies the new surfacing material. Air tools, powered by the compressor on the machine, are used as much as possible to eliminate all hand work. Material for the black-top surfaces is obtained from local dealers.

When the crossing machines are not being worked ahead of the T&S gangs, the NYC uses them for rehabilitating other road crossings and tracks along station platforms and those buried in streets, for cleaning yard tracks and for snow removal. The road estimates that the savings made through the use of these machines, will pay for them during the first year.

Features of the crossing repair outfit

The New York Central's crossing repair outfits are each built around a modified version of the Pettibone Mulliken Model 441 Speed Swing. Designated the Model 442, the modified machine is said to retain all of the features of the older model as to travel speeds, four-wheel drive, length, height and width, and also as to the use of all the existing attachments.

The modifications incorporated in the new model are designed to adapt the machine to crossing repair work. One of these is the new boom design. It has a retractable knee action that permits a 9½-ft forward-and-backward movement of the bucket with one spotting of the machine. The boom can be swung in an arc of 180 deg and has a lifting capacity 50 per cent greater than the preceding model. Buckets are suspended from the boom on a hydraulically operated swivel that permits turning them to any position in 360 deg.

Another feature of the new model is an 85-cfm Gyro-Flo air compressor for the operation of air-powered tools. This compressor was designed specially by Ingersoll-Rand and is driven through a power take-off from the Speed Swing's diesel engine.

Another change is the provision of elliptical leaf-spring suspension for the rear axle. This is said to permit greater oscillation of the rear end while the machine is working and also greater stability when it is moving across tracks. Movements of the buckets and the boom are all hydraulically controlled.

For road-crossing work the machine uses two clamshell-type digging buckets. One is 18 in wide and has a ⅜-cu yd capacity. However, this capacity can be increased to ¾ cu yd by attaching a pair of lips, 42 in wide.

The other bucket, 8 in wide, is specially designed for removing impacted material from tie cribs. The design is such that the lips of the two jaws do not meet when the bucket is in its closed position. They are separated by the bucket frame so that each jaw will work on the opposite side of the running rail. The separation is sufficient to permit the jaws to be lifted past the running rail while in the closed position.

The depth of the digging is controlled by resting the bucket frame on the running rail and also by the provision of three holes for the pivot pin of each jaw. Digging depths are 4 in, 6 in and 8 in below the bottoms of ties. The bucket frame has three notches on its underside so as to provide three bucket positions in relation to each rail. This permits the machine operator to remove even the material under the rails from the cribs.

THE RAKE is shown here making fourth pass over a 500-ft stretch. With the rake angled to discharge to the left, the unit is working the material from the shoulder toward the track. A bulldozer will place it in position for pick up by conveyor-type loader.

How D&H 'harvests' second 'crop' of s

Take another look at those roadbeds of abandoned second tracks. Even where the ballast has previously been recovered they may prove to be an on-the-spot source of sufficient additional ballast to raise the remaining track. At least this has been the experience of the Delaware & Hudson. To recover the additional ballast it uses a mechanical scarifier and rake.

● It's common practice these days, when taking up second track, to reclaim the ballast for use elsewhere. The Delaware & Hudson is among the railroads following this practice.

Now the D&H is going back over some of these same locations and "harvesting" a second "crop" of ballast for use in raising the remaining track in conjunction with out-of-face surfacing operations. The savings involved when it is possible to raise track without purchasing additional ballast are readily apparent, especially if economical means have been found to reclaim the old ballast in usable form.

The D&H believes it has found such means in the form of the York Scarifier and Rake (see accompanying description). The idea originated with N. H. Williams, engineer of track, and J. W. Cummings, supervisor of work equipment, when they observed a rake of this type being used on a county highway. Here, in the words of R. J. D. Kelly, engineer maintenance of way of the D&H, is the procedure that is followed when reclaiming ballast with the aid of this unit:

"A pass is made over the stone with the scarifier teeth to loosen the stone, particularly if the roadbed has been used as a highway. Then about six passes per mile are made with the rake, windrowing the stone from the outer edge toward the remaining track. The rake does an excellent job of removing dirt from the stone due to its whirling action.

"After the rake has gathered the stone into a suitable windrow, a bulldozer makes one to three passes depending on the density of the stone, the purpose being to get the stone as close to the remaining track as possible. A conveyor-type loader is then used to pick up the cleaned stone and distribute it to the opposite shoulder of the remaining track, or to the inside, as necessary."

VOLUME of material handled by rake is illustrated by this view. Scarifier teeth, shown here in the raised position, are used to loosen stone in advance of the raking operation.

stone from old roadbeds

Mr. Kelly goes on to explain that the personnel used in the operation consists, in addition to an assistant foreman in charge of the operation, of a trackman on the rake, an operator on the bulldozer, and an operator on the loader. "The cost to recover the stone," he said, "is about 30 per cent of the cost by former methods."

Mr. Kelly mentioned two examples of ballast recovery by this method. In one of these the rake was operated over a territory of 14 miles where one track had been abandoned and which had been subjected to a ballast-recovery procedure in a prior year, with considerable stone being recovered. Even so, the road was able to obtain sufficient stone to raise the remaining track 1½ in without purchasing additional ballast. The other example involved a territory 7.3 miles long, from which some stone had also previously been recovered. Here again it was possible to obtain the needed ballast without additional purchases.

Referring to the first example, Mr. Kelly estimates "the savings on this one piece of track alone to be considerable, due to elimination of the need for a work train as well as recovery of stone previously not recoverable."

The practice of recovering ballast in this manner and using it to raise the adjacent track, says Mr. Kelly, involves other intangible savings that should be considered. These include the following: Savings in transportation charges for switching and the handling of cars, elimination of the need for using revenue equipment, and elimination of work-train make-up costs, as well as charges for maintenance of equipment. "Could these intangibles be determined in dollars and cents, they would add considerably to the per-mile cost of stone ballasting," says Mr. Kelly.

This is the York Rake

In using the York Rake and Scarifier for reclaiming ballast the D&H has adapted to railroad service a device designed primarily for landscaping and soil-working operations generally. The device is manufactured by the York Modern Corporation, Unadilla, N. Y., and the particular unit used on the D&H is known as Model RE.

Basically, the York Rake consists of a series of curved alloy-steel heat-treated teeth mounted at the upper end between two bars of heat-treated spring steel. The rake is mounted on a hitch frame by means of which it is attached to the pulling unit. It is designed for use with three-point-hitch wheel-type tractors.

In an improved version of Model RE introduced early this year there are 48 teeth each 5/16 in by 1 in by 28 in. in size. The distance between teeth is 1 in. Maximum and minimum working widths of the rake are 8 ft and 6 ft, respectively.

Adjustments make it possible for the rake to be operated at right angles to the pulling unit, angled to right or left, or even completely reversed. There are five angle adjustments forward and reverse. Optional equipment includes two pneumatic-tired caster wheels, a scarifier attachment and a grader blade. The purpose of the caster wheels is to regulate the working depth and aid in producing a uniformly finished surface. They may be mounted ahead of or behind the rake and also serve as a support when the rake is reversed or detached from the tractor. Vertical adjustment of the casters is 6 in, with gauge marks at ½-in intervals.

The scarifier attachment, which is mounted on the rake frame ahead of the rake, carries 10 reversible, replaceable points of heat-treated alloy steel. It has a working width of 6 ft and penetrates to a depth of 6 in. A single pin locks it in the raised or lowered position.

The grader blade, which clamps to the front of the rake teeth, provides a means of converting the rake into a ditching and terracing unit. It may be raised to the top of the teeth when not in use.

A new and heavier model of the York Rake, known as Model RH, has larger and fewer (44) teeth and has a maximum working width of 10 ft.

Barrel-shell roof for big UP freighthouse

What is said to be the largest barrel-arch concrete structure in the west, and perhaps even in the entire country, has been built by the Union Pacific at East Los Angeles, Calif. The structure is a freighthouse roofed with a series of 30 barrel shells, each with a chord distance of 44 ft and a span of 104 ft.

● The roof of the Union Pacific's new freighthouse at East Los Angeles makes full use of the structural strength of reinforced concrete. That's because it is designed as a series of barrel arches. Because of this design the shell thickness is only 4 in, even though the roof has an unsupported width of 104 ft and a length of 1332 ft.

There are 30 of the barrel shells, each with a chord distance of 44 ft. The transverse length of the shells is 117 ft, which is sufficient to allow a 13-ft overhang at one end to provide a canopy over the loading dock. This structure is said to be the largest barrel-arch structure in the west, and perhaps in the entire country. It was designed for the UP by the Leo A. Daly Company, Omaha.

The use of concrete in the freighthouse doesn't stop with the roof; the entire structure, including columns, side walls and platforms, is of reinforced concrete. Some parts, including the roof, were poured in place. Others were precast on the site and some of these were installed by the tilt-up method.

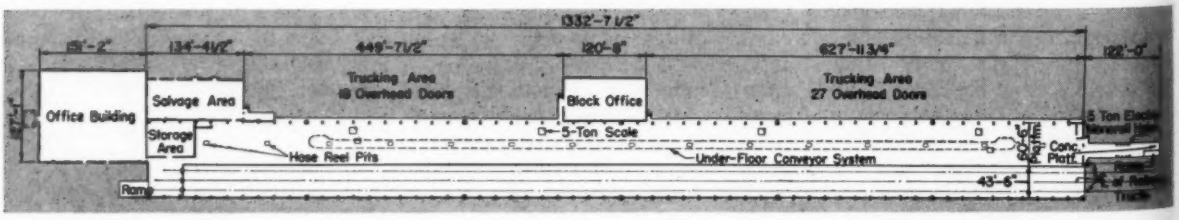
Also of reinforced concrete construction is a two-story office building, 127 ft by 151 ft, at the west end of the freighthouse, a one-story salvage building, 57 ft by 135 ft, at the same end, and a one-story block office, 57 ft by 127 ft, located about midway of the freighthouse on the tailboard side. A security storage room for bonded freight is located at the west end of the warehouse. Cost of the entire project was $3 million.

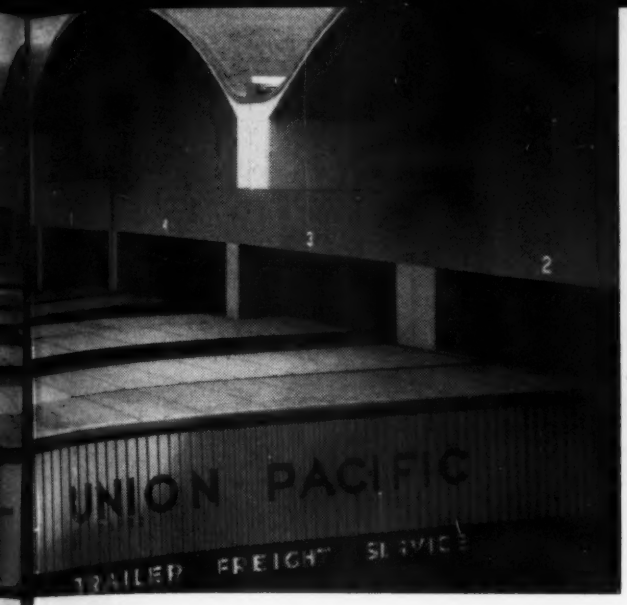
Besides the freighthouse staff the office building houses other departments, such as those of the division superintendent, the division engineer, purchasing, communications, special services and timekeeping.

The new facility was built to replace obsolete facilities and to provide for future growth. It is located on Ferguson Drive in East Los Angeles only

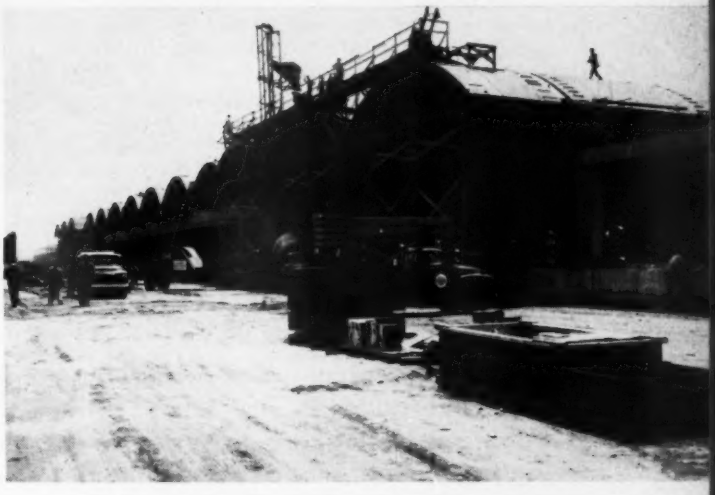
TOWING CIRCUIT extends 1000 ft along the warehouse platform. Entire interior of the building is free of columns. ▲

UNUSUAL length of building compared to width was dictated by shape of strip of property on which it was built. ▼





TERMINAL extends along UP's main line near passenger station. Walls of office building are precast concrete with ceramic veneer.



BARREL shells extend beyond wall columns on tailboard side to form canopy over truck loading and unloading dock.

MOVABLE forms were used in placing concrete for the barrel shells. Note that concrete work is also underway at other end.

a short distance from access to the Santa Ana freeway.

The unusual length of the new freighthouse, particularly when compared to its width, was dictated by the fact that it had to be constructed on a comparatively narrow piece of land sandwiched between the railroad's tracks and the thoroughfare paralleling them on the north side. Three tracks enter the building from the east end and extend along the south wall, terminating near the west end. They have a capacity of 80 cars. A ramp and large door at the west end of the structure permit trailer freight to be handled to and from flat cars in the building.

'Longest' towing system

The northerly portion of the structure for practically its entire length is occupied by a platform about 65 ft wide. The platform is served by an underfloor drag-chain circuit that is said to comprise the longest platform towing system in the west. Merchandise carried by dollies in the drag-chain circuit is considered to be in "live storage" until the lading is wanted either for loading into a truck or a freight car, depending on whether the shipment is inbound or outbound.

Merchandise is transferred between the platform and trucks through 45 door openings on the north side of the building. Each opening is 20 ft wide and is fitted with an overhead door. Ramps adjustable to different truck-bed heights are provided at four of the doors. A five-ton monorail hoist on an open platform outside the east end of the building handles heavy freight directly between railroad cars and trucks.

In constructing the barrel-shell roof, the contractor, Diversified Builders, Inc., used six sets of movable jumbo forms, each set including an upper and lower section for each barrel. Starting at the middle of the building and working towards the ends, the forms were moved forward as the work progressed.

A lightweight aggregate, consisting of an expanded shale from Ventura, Calif., was used in constructing the barrel shells. They were covered with built-up roofing applied over insulation board. An engineer for the designing firm explained that a primary purpose of the insulation board was to facilitate application of the roofing.

Like the barrel shells the segmental wall sections at their ends were cast in place, also using movable forms. The walls below these sections on the south, or track, side of the building consist of tilt-up concrete panels, except for the foundation panels which were cast in place. A total of 60 tilt-up panels were required, each 7½ ft by 20 ft in size and 8 in thick. These were cast inside the building in the area where the tracks were laid later.

Structural parts of the office building, including the "waffle"-type floor slabs, are of cast-in-place concrete. This building has a continuous band of fenestration at each floor level. The curtain walls above and below these bands consist of precast concrete panels faced with ceramic veneer.

Main entrance for the office building is on the west side of the structure. This side of the building features a series of precast concrete fins placed vertically between the windows. Extending from the ground level to the roof parapet, the fins are 5 in thick, 22 in wide and 29 ft high. They have a decorative effect and also give protection from the sun.

Here's how device is used to test hydraulic system of crawler tractor

PORTABLE TESTER, weighing only 19 lb, enables a mechanic to have a reliable instrument for on-the-job testing—in the shop or field—for pin-pointing troubles in hydraulic systems.

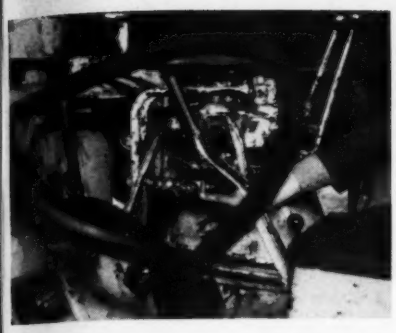
Hydraulic tester cuts downtime o

The Pennsylvania has acquired a number of portable hydraulic-circuit testers for quickly finding trouble spots in hydraulic systems. The resultant saving in time more than pays for the tester in one working season, say PRR officers.

BENCH-TYPE APPARATUS, formerly the only means for testing hydraulic parts, is still very useful. But its lack of mobility requires the removal of parts for testing.

● This year, like last year, the work of track gangs and B & B crews will be slowed down or halted on many roads because of breakdowns of major machines. Work will be delayed as long as it takes the field mechanics to get the units functioning again. Determining the trouble—the diagnosis, as it were—is the key to the situation. To assist its mechanics in this respect, the Pennsylvania has acquired a number of Schroeder testing instruments for pinpointing the locations of failures in hydraulically operated or controlled machines. Other sets have been obtained for M/W equipment repair shops.

Incredible as it may seem, the use of hydraulics for powering or controlling M/W equipment has been adapted only within the last few years. Already hydraulic systems are used on so many machines that a list would be surprisingly long. Spike pullers, production and spot tampers, tie-bed scarifiers, tie handlers, power jacks, track liners, tie spacers, tractors, aerial booms and bridge-tool outfits are just a few of such machines. And the list is still growing. The hydraulic systems are used for propelling, operating or controlling purposes.



TEE FITTING on output side of pump permits a mechanic to make a quick coupling of high-pressure hose leading from a port on the Schroeder testing instrument.

LOAD-VALVE lever is depressed and operating load pressure is read on dial. A comparison with the no-load reading will reveal condition of hydraulic part.

Tests flow, pressures, temperatures

Equally applicable to field and shop troubleshooting, the portable hydraulic-circuit tester, made by Schroeder Brothers Corporation, McKees Rocks, Pa., is designed to test the flow, pressures and temperatures of hydraulic systems. It weighs less than 20 lb and is enclosed in a reinforced Formica case 7 in by 11 in by 8¾ in. in size.

The tester is equipped with two 1-in ports, one for high pressure and the other for low pressure, to which hydraulic hoses with quick-connect couplings are attached. The other end of the high-pressure hose is connected to the output side of the hydraulic pump. The low pressure line leads to the hydraulic-fluid reservoir of the machine being tested. A reverse check valve protects the instrument in the event that the inlet and outlet hoses are accidentally reversed.

The tester has three gauges. One reveals line pressures up to 2,000, 3,000 or 5,000 psi, according to the instrument desired. Another gauge registers the temperatures of the hydraulic fluid up to 220 deg F. The third gauge measures the flow capacity in gallons per minute. The gauges are protected by an orifice relief valve, a back-pressure valve and snubbers. A filter screen keeps foreign particles out of sensitive circuits.

The tester is available in three models each of which has three flow-testing ranges. On the PT-100 model the ranges are 4 to 25 gpm, 12 to 50 gpm and 32 to 100 gpm. On Model PT-50 the ranges are 1 to 12½ gpm, 6 to 25 gpm and 12 to 50 gpm. The ranges on Model PT-17 are 0 to 2 gpm, 2 to 6 gpm and 6 to 17 gpm.

Complete instructions on the proper use of the testing instrument are fastened on the inside of the case cover.

# of M/W machines

Until recently, the usual practice was a hit-and-miss proposition. If the mechanic suspected the cause of failure to be in the pump, he would remove it and either substitute another pump, if one were available, or take the old one apart and examine it. If this did not prove successful, he would continue the inspection to other parts of the hydraulic system until the defective one was found. This was a time-consuming and often frustrating process.

In the road's M/W equipment shops, where machines are overhauled in winter, the hydraulic parts were removed from the machine and placed on a bench-type testing apparatus. Many of the parts tested in this manner were found to be in excellent condition, requiring no repairs, and they were then reinstalled on the machine.

By acquiring a number of the Schroeder testers, the Pennsylvania has changed this practice. These instruments measure pressure in psi, flow capacities in gpm and temperatures in deg F.

Now, when a hydraulic system acts sluggish or becomes inoperative, the field or shop mechanic can pinpoint the trouble spots with the tester without removing the parts from the machine. A good place to start is the machine's hydraulic pump, which is the heart of the system. Using a wrench, the mechanic unscrews the fitting on the output side of the pump. He connects a high-pressure hydraulic hose from the pump to a port at the end of the tester case. He also connects a low-pressure hose from another port on the instrument to the machine's hydraulic fluid reservoir.

The mechanic then starts the machine's engine and moves a lever to make the hydraulic system operative. Working a lever on the tester, he watches the pressure and flow dials rise, then level off. He jots down these gauge readings; also temperatures.

The mechanic then depresses a second lever on the tester, thus placing a simulated load on the system. He then writes down the working readings of the gauges and compares them with the no-load readings. These may reveal a loss of about half in the flow, in which case slippage as a result of wear will be indicated. It is possible that the no-load readings may be below normal and only slightly higher than the load reading, in which case a restriction in the suction line on the inlet side may be suspected. If the no-load reading is normal and the flow under load is little different, it is apparent that the pump is functioning properly and the test should be extended to encompass other parts of the hydraulic system.

The test can then be made with the relief valve cut in. If the readings differ sharply, a faulty valve will be detected. If there is no apparent difference between the load and no-load readings, it proves that both the pump and relief valve are sound. The test then can be broadened to include the directional valve, and so on until the faulty part is found.

The Pennsylvania has found that the testers enable the trouble spots to be detected quickly. The time saved, both in the field and in the shop, more than pays for the testers in one season. To further facilitate making the tests, the road is installing a tee fitting on the output side of the pump on all hydraulic machines as they come into the M/W shops for overhaul. This tee outlet is equipped with a plug which can be quickly removed and the line connected to the testing instrument without having to remove any other part of the hydraulic system.

French monorail car

This car, shown on a test run near Paris, France, is suspended from rubber-tired carriages inside an inverted U-shaped track. The monorail car, designated "Metro Aerian" by the Renault Company, has a capacity of 91 passengers. It is expected to run at an average speed of 62 mph.

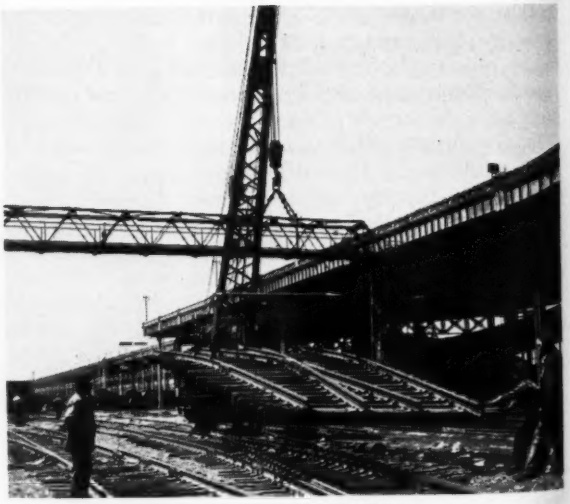
Room for dust-free jacks

A new dust-free room for the assembly of hydraulic jacks and pullers has been installed by Templeton, Kenly & Co. at its plant at Broadview, Ill. Machined parts are cleaned before entering room and are assembled under conditions which insure that no foreign matter can enter the systems.

News briefs in pictures . . .

Building Quebec's new railroad

Canada's new 191-mile Quebec Cartier railway should be ready for operation this year. It is being constructed by forces of Mannix Company, Ltd., who devised this "Traveling Lift" for simultaneously carrying two 78-ft rails forward from the work train.



Modernizing freight yard in Manhattan

The New York Central is revamping its West 60th Street freight yard in Manhattan at a cost of about $4.5 million. Project includes a new classification yard and an automatic towline on freight platform. Track is being laid in preassembled panels.

New types and sizes for . . .

Armco steel buildings

LAST MONTH an expanded and improved line of Armco pre-engineered steel buildings was introduced. Clear-span widths of the new line range up to 120 ft for the truss-type and rigid-frame structures. Wall heights range up to 40 ft for the truss-type buildings and to 24 ft for those of the rigid-frame type. Buildings of the self-framing type have clear-span widths up to 32 ft and wall heights up to 20 ft. In addition, there is a new series of buildings with single-slope roofs. This series is available in widths up to 24 ft.

Self-framing and rigid-frame structures from 8 ft to 120 ft wide are now available with a new choice of roof slopes. These consist of the traditional 4:12 pitch and a new low-silhouette roof with a 2:12 pitch. Buildings with the single-slope roof are said to offer more variety, starting with a nearly flat roof design.

For the rigid-frame and truss-type buildings there is a new continuous-type purlin system. This is said to have two advantages. First, the roof framework itself is lighter and stronger. Second, the purlins are above the rafters, out of the way of wiring, sprinklers, ductwork, insulation and other items. With this new system finishing is said to be faster, easier and more economical.

Another feature of the new line is a "sculptured" Steelox curtain-wall panel that is said to provide an attractive shadow effect. This is a Steelox panel formed with a channel in the cross-section. It is now available as the standard wall covering for truss-type and rigid-frame buildings ranging in width from 32 ft to 120 ft. These panels are said to give a true curtain effect. Doors and windows, it is claimed, become an integral part of the wall.

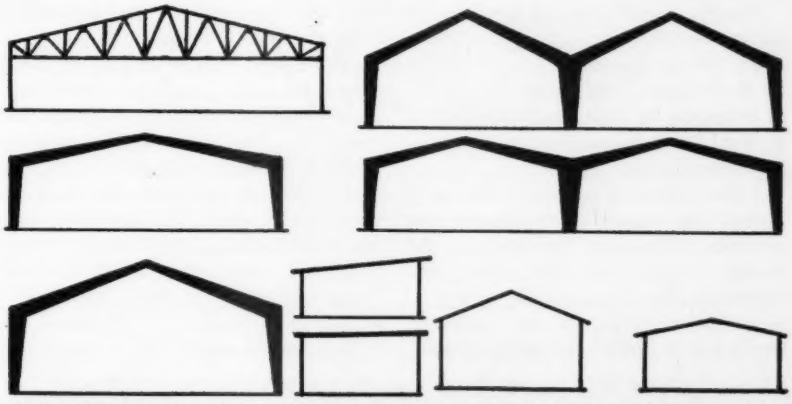
Another innovation is a special new industrial interior wall panel designed to the same 16-in module as the exterior Steelox panels. These liner panels are shipped ready to snap in place, with moisture-proof insulation already applied. They are made to fit all Armco buildings.

The liner panels can be installed in all or any part of a building. When used with Steelox panels on exterior walls these special interior panels are said to provide an efficient finished wall from the standpoint of heat loss. The U-factor is said to be .16.

Other features include an all-metal flush-type swinging door made of heavy-gage Armco Zincgrip Paintgrip steel for maximum durability.

According to the company, Armco steel buildings are not a group of standardized prefabricated buildings. Instead, it is said, they represent a system of standardized building parts that can be arranged in many combinations to meet individual needs without sacrificing functional or esthetic values. *Armco Drainage & Metal Products, Inc., Dept. RTS, Middletown, Ohio.*

THESE OFFICES illustrate use of the new insulated finishing panel for interior walls. The panel comes complete with base trim and ceiling trim, plus finishing pieces around the doors and windows. It comes in the same 16-in module as the exterior panels.



CROSS SECTIONS of various types of Armco buildings show choice of roof slopes available for rigid-frame and self-framing types. Choice is between new low-silhouette roof (2:12 pitch) and traditional 4:12 pitch. Single-slope roofs offer even more variety.

SEVERAL of the new features are incorporated in these rigid-frame buildings. One is the low-silhouette roof. Another is the new sculptured Steelox panel. Armco buildings are produced from two basic types of coated steel—Zincgrip and Aluminized.

WHAT'S THE ANSWER?

Using work equipment on yard tracks

To what extent can tie-renewal and surfacing equipment be used for the maintenance of yard tracks? Should this work be placed on a cycle basis? Does the size of the yard and traffic density make a difference? Explain.

No doubt about it

By R. J. D. KELLY
Engineer Maintenance of Way
Delaware & Hudson
Albany, N.Y.

It is now generally acknowledged by M/W officers that it has only been possible to keep main-line tie-renewal and surfacing costs within reason in recent years by adopting:

(a) The cycle basis
(b) The use of mechanized equipment to the fullest possible extent.

Surely, if this method has proved to be the most economical one for main-line maintenance, there should be little doubt concerning the merits of widening its scope and adapting it to yard-track tie-renewal-and-surfacing maintenance.

I don't think that the size of a yard makes too much difference in the problem. However, the heavier the density of the yard traffic, then, undoubtedly, the more troublesome it is to get a minimum of two adjacent tracks out of service for sufficient time to adequately accomplish the work.

The heavier the density of the yard traffic, the more necessary it is to complete the work in minimum time. Consequently, it is essential to have a tightly knit and efficient mechanized gang operating in two phases, e.g., one unit for renewing ties and unloading ballast, and one unit for surfacing. The tie-renewal unit works continuously, moving from track to track. Meanwhile, the surfacing unit works on main-line surfacing adjacent to the yard until at least one yard track has been completely re-tied. The surfacing unit then moves in and surfaces the yard trackage ready for it, and then moves back out again and surfaces the main line. The surfacing unit thus alternates between main-line surfacing and yard-track surfacing until the yard work is finished. By handling the work on this basis any waiting or unproductive time, which would develop if the surfacing unit were held exclusively for yard work, is eliminated.

On the Delaware and Hudson we are operating on the cycle basis for tie renewals and surfacing for all main-line, branch and yard tracks. This year we have programmed a total of 10 miles of tie-renewal and surfacing work in two yards by a fully mechanized gang.

No greater savings

By L. G. LAWSON
Roadmaster
Canadian National
Melville, Sask.

There is no phase of maintenance where there can be a greater saving than in the out-of-face installation of ties in yard tracks. The busier the tracks are, the greater the savings.

As all maintenance men know, yard-track tie renewals are always a trying and expensive problem. In many, if not most, cases, the space between tracks is almost as high as the top of the ties. Also, it is nearly always full of well-packed ballast, very often badly fouled, so that tie-renewal work in the ordinary manner is a very expensive problem. Getting tracks from the yardmaster also is quite a problem as, in many cases, tracks in yards are usually filled with cars at least part of every day.

Ties in yard tracks can be allowed to deteriorate to a greater extent than

NEW QUESTIONS to be answered in September

Do you have an answer to any of the questions listed below? If so, send it in. Payment—based upon substance and length—will be made for each published answer. If you wish your name withheld, we'll gladly comply.

DEADLINE: July 30

●1. What is the best way to handle the fueling and servicing of track equipment? Should the foreman or operator be responsible for seeing that this work is done? Explain.

●2. What is the proper procedure when using an increment borer for determining the soundness of timber? Describe in detail.

●3. What work applications can track supervisors make of cranes? Is there enough of this work to justify furnishing one to each supervisor, to each two or three supervisors, or to each division engineer? Should the crane be on-track, off-track, or a combination of both? Explain.

●4. Is it practicable to straighten masonry piers or abutments which have developed a tilt? If so, how can this condition be corrected? If not, explain why.

●5. On roads where track maintenance is being carried out by mechanized gangs, how is miscellaneous work, such as the repair of fences and the cutting of brush, handled? Describe in detail.

Send answers to:

What's the Answer Editor
Railway Track & Structures
79 West Monroe Street
Chicago 3, Illinois

Do you have a question you'd like to have answered in these columns? If so, please send it in.

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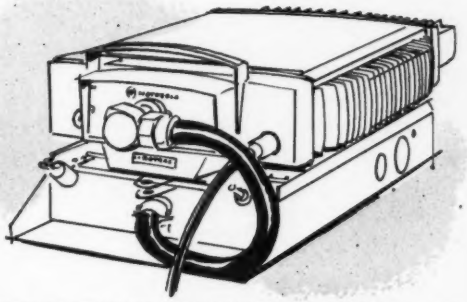

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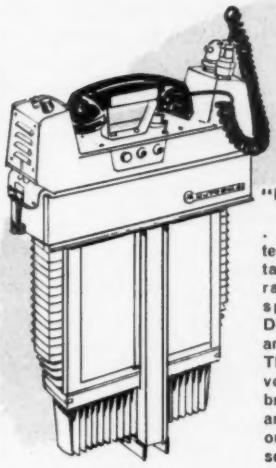

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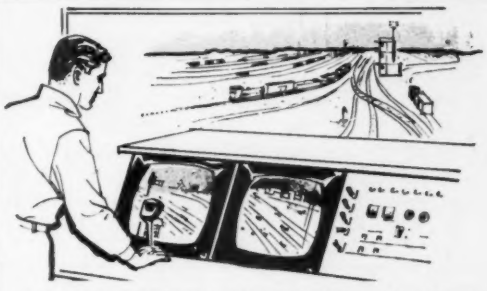
"HANDIE-TALKIE" PORTABLE RADIOPHONE . . . for yard, terminal and maintenance-of-way operations. Choose from 45 models designed to give highest power output and lowest possible weight. Available in mike and speaker or handset models with standard cells or rechargeable nickel-cadmium batteries.



CLOSED CIRCUIT TV MONITORING . . . for the ultimate in personalized control over yard and terminal operations. Now, you can monitor one or several operations from a single point. Full remote control provides flexible camera operation over wide areas.

MICROWAVE RELAY SYSTEMS . . . end wireline "saturation" problems. With **service-proved** Motorola microwave, you can handle all of your voice messages, with space to spare for telegraph, VHF 2-way radio, television, and present or proposed high speed data transmission links.

Motorola gives you MORE . . . in communications, service, satisfaction. Quality design with service-proved performance is the foundation of Motorola leadership in railroad communications. With such continuing leadership achievements as MOTRAC Universal 64/12-Volt Railroad Radio backed by the widest range of audio and visual communications, you can call on Motorola with full confidence. Large and small, every Motorola system is custom designed to specific user requirements. You'll find Motorola equipment lasts longer, works better—therefore costs less to own and operate. Your Motorola representative will give you full facts and figures.

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ties on a busy main line where speeds are far greater. Because of this, when ties are changed out of face in yard tracks for the first time, not as many that are on the border of being serviceable need be removed. Yard tracks, while they need to be in good line and surface in the newer hump yards, need not be in as good line or surface as main-line tracks in the older-type yards. In view of this, about the only time that yard tracks need surfacing is once every five years, and the ties can be renewed at the same time.

I would certainly agree that yard-track tie renewals should be on a five or six-year basis, and the track should have a general surfacing job at the same time. A 3-in lift, or even less, would seem to be the most desirable. In most yard tracks this can be done without any additional ballast.

With the cooperation of the yardmaster, a track should be cleared of cars while the tie renewals are in progress. This allows the foreman the best possible use of the available time and the most economical use of power machines. Ties should be unloaded where required and the track lifted and ties renewed in one operation. I would also strongly suggest that bolts be tightened at the same time as then, aside from the possibility of a broken rail, nothing further would be required for a period of five or six years. The track would, of course, be gaged and trimmed when the surfacing and tie renewals were done.

12 to 20-year cycle

By H. C. Koch
Roadmaster
Belt Ry. of Chicago
Chicago

Using tie-renewal and surfacing equipment to maintain main-line track has been proven to be both economical and efficient when work is scheduled systematically, i.e., on a cycle basis for comparatively long sections of track. This equipment can be diverted to yard maintenance work when available.

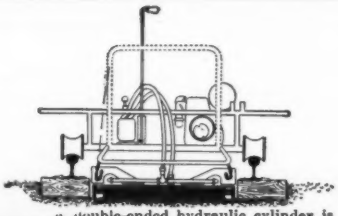
Some railroads, such as terminal roads or belt lines, have a small mileage of main line and a relatively large percentage of yard tracks. Usually, they have denser traffic because they are located near manufacturing centers and a number of other roads may use the terminal facilities. These properties have some problems that are different from those encountered on the main line.

Terminal roads do not generally have need for, and therefore do not purchase, all kinds of equipment used by a main-line mechanized production gang. A careful analysis will determine the yard maintenance that can be efficiently and economically mechanized without materially delaying train operations.

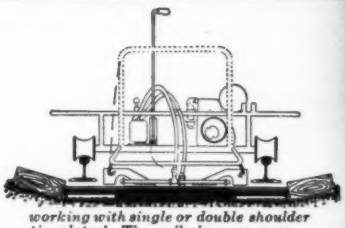
Unit costs are usually less when there is a considerable amount of work in one location. One reason for this is that the expense of moving equipment, material and labor is divided into a large number of units. Maintaining yard tracks with mechanized production gangs should therefore be planned and scheduled if possible, on the basis of ugrading an entire yard, or a substantial part of it, in one job. With such planning a 12 to 20-year cycle should be attained.

(Continued on page 42)

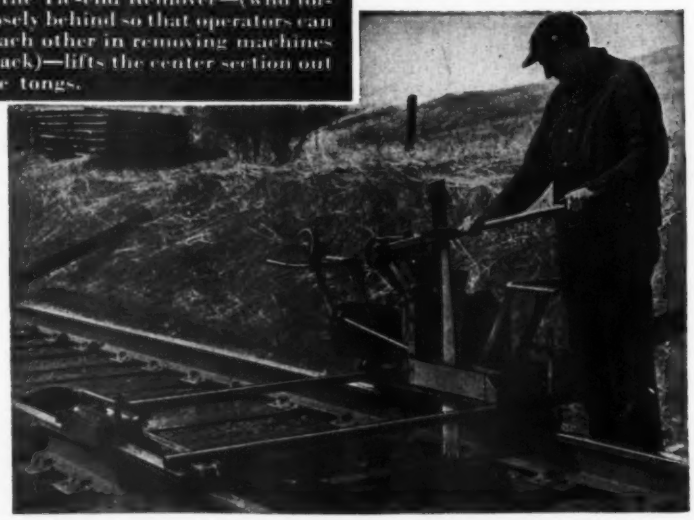
NO MORE TRENCHING!
NO MORE JACKING UP TRACK!
This WOOLERY
TIE-REMOVING TEAM
NOW ELIMINATES SLOW,
COSTLY METHOD



A double-ended hydraulic cylinder is then lowered into the tie bed. A simple turn of the valve moves these two pistons outward, *pushing the tie-ends completely clear of the rail—whether working with single or double shoulder tie plates!* The crib is now open—and only the necessary amount of ballast is removed to admit the new tie.



After the tie has been cut on both sides by the WOOLERY Tie Cutter, the operator of the Tie-end Remover—(who follows closely behind so that operators can assist each other in removing machines from track)—lifts the center section out with tie tongs.



Use the WOOLERY TIE-END REMOVER in conjunction with the improved model NU WOOLERY TIE CUTTER! It's the *perfect team* for greater savings on tie renewals—and gives *smoother, safer track, too!*

For highest efficiency two Tie Cutters should be used ahead of one Tie End Remover.

The trend toward heavier rail and double shoulder tie plates has made removing tie-ends increasingly difficult. With the WOOLERY Tie-end Remover, this task can now be done *in less than a minute by one man with no more effort than that required to turn a valve!*

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Heavy-duty International Danco mowers, 66 or 94-inch widths, cut and pulverize for complete brush disposal.

Don't worry about stones and debris—Operator rides safely above the mower; safety chains prevent throwing.

Lush grass is both cut and mulched. This speeds decomposition to prevent interference with later mowings.

From house-high brush to fine turf...

International® Danco mows all!

Thick stands of tall weeds or heavy brush melt away under the whirlwind attack of International Danco center-mounted rotary mowers. Fine turf is clipped clean. Side slopes other outfits can't safely touch are quickly mowed . . . center-mounted design lowers the tractor center of gravity, permits safe mowing on slopes as steep as 2 to 1. Exclusive non-wrap spindles keep wet or wiry growth from wrapping, to insure continuous, uninterrupted mowing. Level-lift control linkage automatically levels the mower with each change in cutting height, lets operator adjust cutting height on-the-go. Optional 10-speed Torque Amplifier drive for 66 and 94-inch units, gives operator the exact tractor speed he needs for most efficient operation. Because of their versatility, International Danco mowers reduce investment, simplify servicing and reduce overhead costs.

There's a full line of International Danco mowers for every maintenance requirement—ranging from low-cost, 42 or 60-inch units (ideal for maintaining station grounds and other confined areas), to rugged, 61 hp units cutting 94 inches wide. Write today for catalog. International Harvester Co., Dept. RTS-6, P.O. Box 333, Chicago 80, Ill.

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What's the answer? (cont'd)

The following items given careful consideration will not only produce results that will lengthen the cycle range but will also reduce the amount of miscellaneous repairs, such as tightening bolts, raising low spots, etc., between cycles:

Leads and ladder switches—Should be surfaced and timbered when entire yard is to be worked as some of the available equipment can be used.

Grade and drainage—Experience will have indicated the betterments and changes necessary to improve operating conditions and to effect maintenance economies.

Surfacing—The amount of raise is to be determined by the condition of the present ballast, operating and drainage requirements. If possible, the raise should be high enough to allow tie-handling equipment to be used advantageously as most yard tracks are in multiple units.

Rail and fastenings—Replace worn-out and defective material. Extensive renewals could be done as a separate job prior to tie-renewals and surfacing.

Ties—Many yard tracks are now laid with treated ties that can be said to have a more or less indefinite and relatively long life. It should not be necessary to remove an excessive number of ties to attain a 12 to 20-year cycle. Every fourth or fifth tie in tangent tracks should be sound, then, if some of the other ties become scrap, it would be safe to continue operations over these tracks for the complete cycle.

Ballast—Cinders are not generally available. Therefore, select a type of ballast, such as slag or stone, that will improve drainage and retard weed growth. Care must be exercised to keep space between tracks safe for walkways.

Some machines which can be adapted to upgrade yard tracks are power spike pullers, tie spacers, jacks, wrenches, spikers, tampers of all kinds, liners, anchor applicators, cranes and loaders. Other equipment can be used when conditions are favorable.

There will be more economy and greater safety if the tracks adjacent to the one being repaired are taken out of service at the same time. Standing or moving cars on adjacent tracks are a disturbing problem when working on yard tracks. This becomes more distracting and unsafe when using power equipment. If possible, adjacent tracks should be kept clear and available for handling new and released material and some of the equipment.

The operating department will be inclined to cooperate in this matter if the savings are brought to the attention of responsible officers. They must also be shown that such cooperation will mean less interference to train operations in the long run. However, the work must be well planned and performed with minimum delays to earn the continued cooperation of the operating department.

Some of the above statements are outside the scope of this question but the subject requires a bold approach to produce savings and at the same time improve maintenance standards. There will be savings that can be readily shown and indefinite savings brought about by fewer accidents and less delays. This should be more noticeable after the mechanized production gangs upgrade a few yards.

(More answers on page 44)

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The rail anchor whose advantages loom larger every day. . . .

As modern as machine maintenance, yet proven by years of successful performance. Check these advantages. No other anchor offers all of them.

- *Unsurpassed holding power.* No anchor has more holding power than the UNIT and few are its equal.
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Experienced maintenance of way men know that Racor tie pads save money in various ways. They extend the life of expensive ties by reducing plate cutting, spike killing, and softening of the wood fibers. They increase the effectiveness of track fastenings by cushioning shock and delaying tie deterioration. And for these same reasons, they help maintain better surface and gage.

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All Racor tie pads are top quality throughout—with ample tensile and compressive strength, uniform thickness, and necessary flexibility. They have been proven in the laboratory, proven in A.A.R. sponsored tests, proven in years of severe road service under all kinds of conditions.

Why not let your Brake Shoe representative help show you how top quality Racor tie pads can best be put to use on your road? American Brake Shoe Company, Railroad Products Division, 530 Fifth Ave., New York 36, N.Y.

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- Optimum thickness for strength and flexibility.
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- Durable . . . effective . . . economical.
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A-7211

What's the answer? (cont'd)

In larger yards

By THOR MONROD
Section Foreman
Northern Pacific
Billings, Mont.

Surfacing and tie-renewal equipment can be used to a very great advantage in the maintenance of yard tracks. These machines can be used on a cycle basis, particularly in division and larger yards. In such yards, the tracks are used or occupied each day, almost continuously. Therefore, it becomes a real problem to carry out any general maintenance work each year, such as tie renewals and surfacing, by manual labor. Each track worked has to be pulled out of service while the work goes on. Consequently, the interruption to yard service is longer, when using manual labor, and more costly.

It has been my experience that, whenever a yard track needs tie renewals, it also needs a surfacing job and a general overhaul. This is because the track fastenings, such as spikes, angle bars, bolts, and tie plates, are badly corroded and there is an accumulation of dirt and rubbish as well as some settlement of track. In the past, whenever repairs were made to any of the yard tracks, it was mostly on a patch-job basis because of the shortage of time and maintenance money allowed.

To use machines for such work, a program must be worked up. This would include the removal of certain yard tracks from service while the work was being done, so that there would be no interruption to the men or the machines and the time consumed would be at a minimum. I believe the cycle basis could be used to better advantage in the larger yards. For less interruption to traffic, the work should be programmed for a certain time of year when traffic is not as dense. This also is a factor to bear in mind for the small unimportant yards.

Expansion bearings for bridges

What type of expansion bearing is the most suitable for use under long steel-span bridges? Why? What maintenance is required and what frequency of attention is necessary to keep it continuously effective? Explain.

Prefers bronze plates

By R. E. PECK
Bridge Engineer
Missouri Pacific
St. Louis, Mo.

For many years it was the practice to use roller-type expansion bearings for truss spans and for girder spans more than 75 ft long. In later years, however, rocker-type expansion bearings have been used in lieu of the roller-type in many instances. Neither type has been entirely satisfactory for railroad bridges in view of the maintenance work required to keep them in condition so that they will function as intended.

The writer prefers an expansion bearing which includes a self-lubricated bronze plate, recessed into the lower part of the expansion shoe. Lubrication of the top surface of the bronze plate, on which the upper part of the shoe assembly slides, is provided by a compounded material consisting mainly of graphite and metallic oxides with a lubricating binder. The compound is extruded and compressed into machined recesses by means of a hydraulic press. The recessed areas should be about 25 per cent of the plate area.

Expansion bearings of this type can be used for spans up to 400 ft long with thickness of bronze plates ranging from one-half inch to one inch. Such bearings require little or no maintenance or further attention after they are once in place.

Employing local contractors

With your present labor agreements, can you hire local plumbers, glaziers, heating contractors, carpenters or masons to repair toilets, windows, doors, furnaces and concrete, instead of sending an entire crew to do the job? If so, how are the work and payments arranged? If not, what is done in such instances? Explain.

Depends on conditions

By D. A. KUEBLER
Division Engineer
Kansas City Southern
Pittsburg, Kan.

In our present organization we still have some men who can handle the ordinary building plumbing and heating jobs, both in construction and maintenance, if not too extensive.

The question refers primarily to maintenance and to whether such work can be done by other than company forces. Where such repairs are occasioned by ordinary wear and tear or usage, the need normally does not develop suddenly. Hence, the work usually can be planned in advance and handled by the current force without excessive expense or loss of time in reaching the jobs. We are required by our agreement and its interpretations to reserve work of this nature for our men.

In many cases, however, this does not apply to emergency work such as may be caused by accident, storm or flood. Most frequent are the smaller jobs that need to be taken care of on the day they happen, or at least with minimum delay, to protect the contents or the necessary use of a building. In cases of this nature, if company forces happen to be near enough to get to the job quickly, they are called upon. Otherwise, if local private plumbers or carpenters are immediately available, the agent is authorized to employ them and to forward their invoices to the accounting department for handling. Where the

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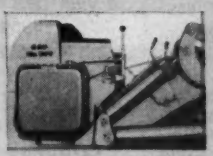

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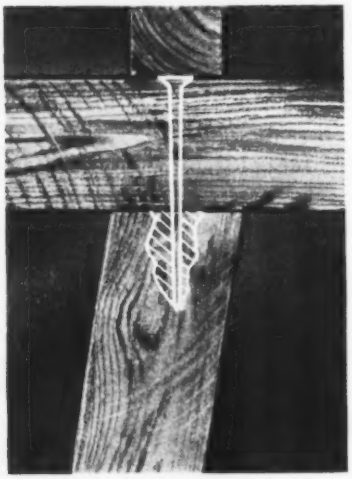

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What's the answer? (cont'd)

expense is not great, a roadmaster or division engineer may pay it and include it in his expense account.

If the emergency requires extensive work, company forces are employed if they can reach the job and get it done quickly enough. If company forces should be inadequate or insufficient to restore the facility to service with reasonable promptness, the general chairman will usually agree to contracting the work. Work contracted in this way, of course, is usually on a force-account basis.

Unless the work is quite unusual or of emergency nature, we employ company forces in the kind of work in question to comply with the agreement.

Maintaining order in camps

When camp cars or trailers are set out in a town, who is responsible for maintaining order and discipline among the men? What measures can be taken to insure proper conduct? For keeping the cars in good housekeeping condition? Explain.

Has no trouble

By J. F. McCarthy
Supervisor Maintenance of Way
Erie
Elmira, N.Y.

We do not have much trouble in maintaining order and discipline among the men. The men through this territory are all family men and return to their homes over the weekends.

Where only one or two men are assigned to a camp car or house trailer, the men themselves are responsible for keeping the cars in good clean condition.

Where six or more men are assigned to camp-car headquarters, a cook is also assigned and it is his duty to keep the cars in a clean and sanitary condition.

Supervisory officers are required to make periodic inspections of these cars and report conditions found to division engineers.

Establish rules

By R. G. Simmons
General Roadmaster
Chicago, Milwaukee, St. Paul & Pacific
Chicago

When camp cars or trailers are set out in a town, the responsibility for maintaining order and discipline rests with the head foreman.

This is true regardless of where the camp equipment is set out. Whenever a new gang is organized, its general foreman, or the head man regardless of what title he may be given, is usually brought into the head office and given instructions relative to the proper procedure for handling the gang and camp. We also furnish these supervisors with written instructions.

I have often thought of the gang foreman as being in the same category as the captain of a ship. Once he is appointed the head man, the launching is over and he is on his own. Like the ship captain, he is frequently miles away from the port of his division officers during all times of the day or night.

A good foreman will look his camp over and establish a set of operating rules, delegating certain phases to subordinate supervisors. After it is set up, he will make frequent inspection trips to assure that all conditions are being kept up to standard.

One of the most important rules is that there must always be someone present who is responsible for maintaining order and discipline.

It has always been my belief that camp conditions are going to be just as good as the general foreman wants them to be, and as bad as he permits them to be.

Supervisors should check

By C. E. Wachter
Bridge & Building Master
Canadian National
Port Arthur, Ont.

To some men, especially among those working on these gangs, their attitude may be that the foreman's juris-

diction ends when the work day ends.

This is not true. Each has a responsibility to the company which pays his wages. Each must also remember that his living accommodation, which are owned by the company, are supplied as part of the work agreement.

A good foreman has little difficulty in controlling his men both on and off the job. He tells them that it is expected they will conduct themselves in a proper manner when off duty. He also advises them that to conduct themselves improperly is a reflection on the company they work for.

Usually there is a bull cook, or chore boy, delegated to look after the camp care and sanitary conditions. Here again the foreman in charge is responsible to see that camp cars and trailers are kept in a clean and sanitary condition. All foremen are, from time to time, issued directives on required sanitary conditions and they should see that these directives are adhered to.

While the conditions mentioned are the responsibility of the foreman in charge, it is the responsibility of the supervisor to continually check and see that the entire situation is kept under control. A supervisor is expected to have an efficient and orderly commitment of men who perform their work to the best of their ability and to the economical interest of their company.

Post rules in cars

By G. L. HILLMAN
General Roadmaster
Minneapolis & St. Louis
Minneapolis, Minn.

In a large measure the responsibility for maintaining discipline and order among the men of a traveling crew rests with the foreman. While he cannot be expected to serve as a chaperone to the men during their free time, he can be cooperative with the town officials when an employee's misconduct is brought to his attention. The foreman can establish and enforce good conduct during the regular working hours and also while the men are in and around the camp cars.

When our crews were established, lists of rules and regulations (taken from the M&StL Book of Rules) were printed and placed in the camp cars. The foremen in charge called the men together at the close of the first day's work. At this time, he discussed each

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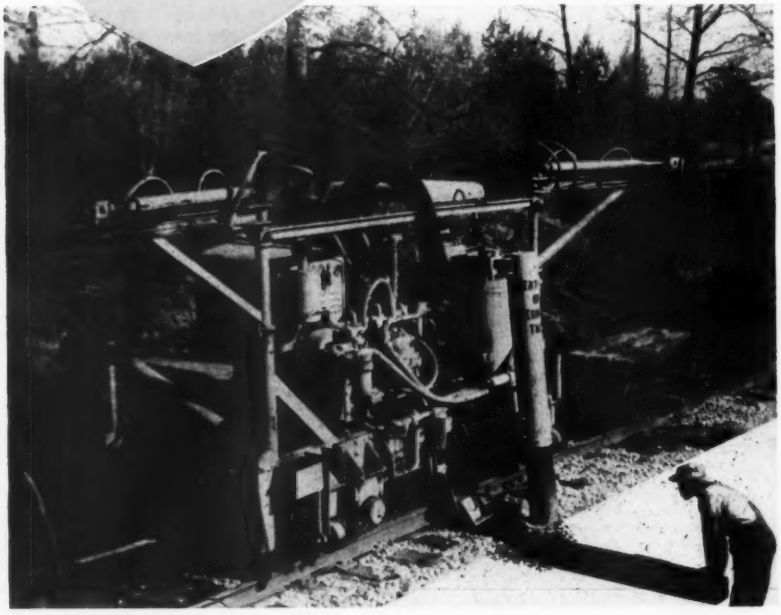

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What's the answer? (cont'd)

rule separately so it would be thoroughly understood. Some of the more pertinent rules were printed in large type and posted in the camp cars where they could be read by all concerned. These rules covered such subjects as carelessness about safety, use of intoxicants, disorderly conduct in the camp cars and in public places, vulgar language, practical jokes and squalid conditions in the camp cars. Naturally, the foreman must live up to the rules he expects to enforce.

With such a crew, the ability to return to their homes over the week ends has a decided advantage in preventing acts involving the townspeople and place of business.

We have women cooks in our gangs. Usually, they are either the wife of the foreman or of one of the other men in the crew. The men in the crews are allowed time on rainy days to clean up the cars.

Have a good foreman

By Earl W. Knight
General Foreman of Track
Pennsylvania
Marion, Ind.

I feel that the foreman in charge should be held responsible for maintaining order and discipline among his men, and also for the cleanliness of the camp cars or trailers. Supervisors should see that he does not shirk his job.

I have lived in camp cars off and on for 11 years. I've seen few foremen who will accept the responsibility of maintaining order, discipline and cleanliness. The foreman who did accept their responsibilities had happy and clean camps. In camps where the foremen shirked their duty, you usually found a dirty camp, discontented men, union trouble, a poor safety record and a poor work record.

In the past two summers I have run a heavy raising gang. As foreman, I set some strict rules when I started out, and which I have followed myself. These are as follows:

(1) Each man is responsible for making his bunk and changing the linen once a week.

(2) He must keep his person clean (bath, shave, haircut if needed) and change to clean clothes after work.

(3) He must keep his dirty clothes picked up and stored in his locker.

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What's the answer? (cont'd)

(4) He is not allowed to lay on his bunk with his dirty clothes or shoes on.

(5) We have "lights out" at 10 pm and any man returning to camp after this time must be quiet, so as not to wake the other men.

(6) Any man who drinks too much the night before is not allowed to sleep in the next day. If he is unable to work, he must leave the company property to sober up.

In the dining car each man observes the following rules:

(1) He must act like a gentleman at all times.

(2) He is not allowed to eat a meal without his shirt on, and he must remove his hat.

(3) When he has finished eating, he must remove his dirty dishes and take them to the kitchen.

(4) When his noon meal is eaten in the country, he must not throw paper and garbage on the right of way or on private property.

(5) All garbage and trash from the camp is either burned or buried.

The foreman must abide by the same rules as the men, and the men enforce the rules, the same as the foreman.

We have been blessed the past two summers with a good, honest and reliable company cook. He has helped me a great deal by preparing good food at a reasonable price, and by assisting me in the running of our camp.

When we have over 14 men in camp, we have a camp attendant to clean the cars. If less than 14 men, a trackman is sent in for 4 hr, 2 days a week, to clean the cars and mop the floors. However, each man is still responsible for cleaning up after himself on his off-duty hours.

In the past two summers our gang has had from 13 to 36 men. It has a very good safety record, no union troubles, and never had a man in jail. Neither have we ever had any fights or disturbances. Every town in which this camp has parked always welcomes us back.

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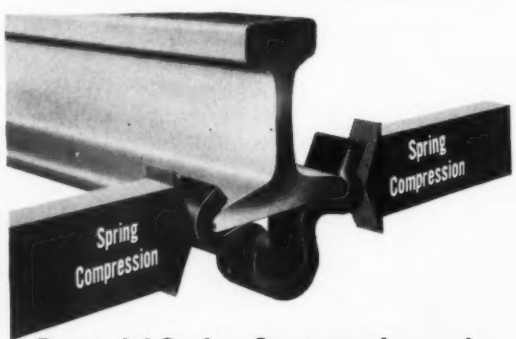

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PRI MEMBER

Use of throat-cut track spikes

How much can track spikes be throat-cut and still be suitable as line spikes without affecting track gage? To what extent can such spikes be used for holddown fastenings? Explain.

Restrict to tangents

By M. A. STELL
Supervisor of Road
Baltimore & Ohio
Point Marion, Pa.

Using throat-cut spikes as line spikes should be restricted to tangents and the spikes should not be cut more than ⅛ or 3/16 in., depending on the general condition of the spikes otherwise. If spikes are of almost full section, their being ⅛ to 3/16 in. throat-cut should not affect the gage enough to be noticeable on tangent track and should last as long as new spikes.

Throat-cut spikes, if of almost full section otherwise, could be used as holddown fastenings and last as long as new ones, even though cut ⅛ to 3/16 in.

Inside of curves

By G. A. DOWDELL
Supervisor M. of W.
Canadian Pacific
Toronto, Ont.

The Canadian Pacific has standardized on the single-shoulder, three-hole tie plate for both the 100-lb and 130-lb rail. This standard is used in our main tracks with all curves double-spiked on the inside of the rail. It is the practice to replace the two inside spikes when they become throat-cut from ⅛ in to ¼ in. When they have reached this condition, it has been found that they will not hold the proper gage, especially if the holes in tie plates are worn. As the shoulder on the tie plate prevents the rail from moving out, the outside spike merely acts as a holddown spike and is seldom changed out on account of being neck worn or throat cut.

When new rail is laid, it is normally the practice to install new spikes on the gage side of the rail and to use the best of the old released spikes to replace the outside spikes.

Usually on frogs and diamond crossings, throat-cut spikes are more prevalent than elsewhere. To maintain the correct gage it is desirable to replace these spikes when they become worn ⅛ in.

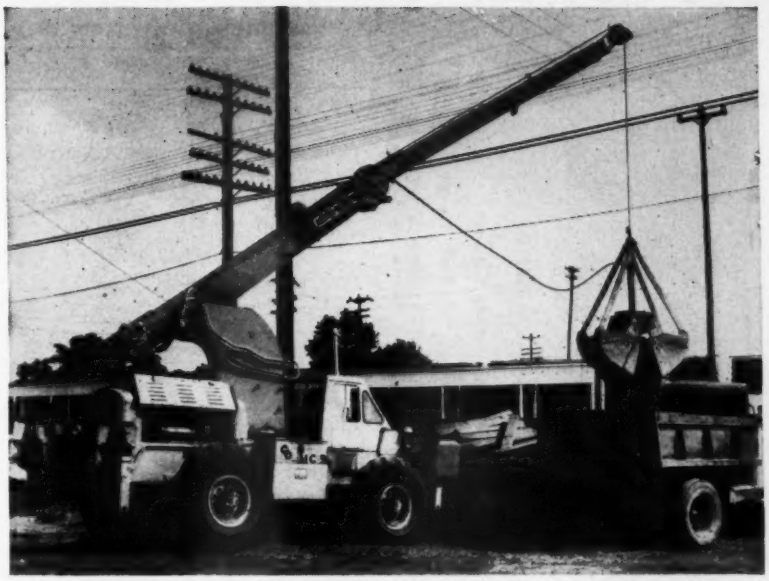
They damage plates

By G. A. PEARSON
Roadmaster
Algoma Central & Hudson Bay
Sault Ste. Marie, Ont.

As this question touches on a problem which has received my attention on numerous occasions, I can state that varying factors contribute to the amount of wear allowable to spikes in diverse locations. My first view on this subject is that, whenever such spikes are found to be neckworn or cut under the head to the extent that they will shear or break off under traffic, they should be replaced.

In my experience on one of the major Canadian railroads, I found that badly worn or throat-cut spikes contributed to excessive wear of the tie plates. Also, in certain locations, a large number of tie plates had to be renewed due to the fact that the punched holes were enlarged and caused excessive movement of plates under traffic to the extent that track gage was affected.

In my opinion throat-cut spikes



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What's the answer? (cont'd)

should not be allowed to remain too long in service on heavy curves, at locations where the roadbed is muddy and unstable, or where heavy frost disturbances in the roadbed are encountered.

Worn and throat-cut spikes could, however, be used as economy directs on subsidiary tracks or on stable well-anchored tangent track, provided that the wear of such spikes is not of an excessive nature.

Up to 1/16 inch

By O. D. TUCKER
Supervisor of Track
Chicago & Eastern Illinois
Steger, Ill.

It has been our practice to allow the use of spikes cut to a depth of 1/16 in. in the throat. With any cutting in excess of that, we do not consider the spike fit for main-line use, and under no circumstances should it be used on curves. Where tracks are taken up, the spikes are recovered as scrap. The spikes are then carefully sorted and, if their heads are in good condition, they will be used for auxiliary tracks. For holddown fastenings on our switch stands and plates, we use new spikes only when the removed spikes show any wear or defects.

A track spike is a vital part of good track. Where safety is concerned, I do not believe that any economy is effected by using defective track spikes.

Not on main line

By RESIDENT ENGINEER

With the modern double-shoulder tie plates and various types of plate holddown fastenings, it is doubtful in my mind whether the throat-cutting of line spikes has any bearing on either the line or the gage of the track. Throat-cutting would have a definite effect on the gage in a yard track with single-shoulder tie plates or no tie plates at all, but not so in well-maintained main-line track.

With the present design of double-shoulder tie plates, a line spike need only be worn 1/32 in or be bent outward 1/32 in for the base of the rail to engage the shoulder of the tie plate.

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In fact it is my opinion that the shoulder of the tie plate and the effectiveness of the holddown fastenings are the secret to track with well-maintained line and gage. Without a doubt, if you find a severe case of throat-cutting of line spikes you will likewise find tie plates with the shoulder irregularly worn, with the holddown tie-plate holes worn, and the holddown fastenings ineffective. It is very possible also that the ties will be split or decayed.

It is a fact that, on a certain test section of a given railroad, some of the line spikes have been eliminated entirely on certain ties that have good effective holddown fastenings with a compression clip to hold the base of the rail down between the two shoulders of the double-shoulder tie plate.

It is true that in heavy brine territory the heads as well as the throats of the line spikes will become rust-pitted and lose section much faster than the holddown spikes or fastenings. But this in itself is not "throat-cutting." If a spike used as a line spike becomes so rusted that it cannot be depended upon to keep the base of the rail between the shoulders of the tie plate, it should be replaced. But, it will be of no value as a holddown fastening.

The principle of the present double-shoulder tie plates is based upon the holddown fastenings being almost 100 per cent effective, plus a minimum tolerance in play between the base of the rail and the shoulder of the tie plate. For holddown fastenings to be effective, the fastening must totally fill the hole in tie plates. Based on these premises, it is my opinion that any spike removed on acount of corrosion of either the head or throat, or on account of so called "throat-cutting," should not be used as holddown fastenings.

To the editor

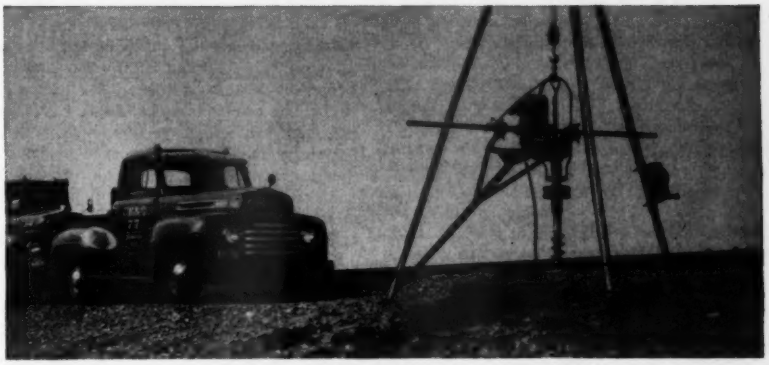
Machine operator's views on AREA panel discussion

TO THE EDITOR:

It was with quite some interest I read the articles in your April issue about the AREA meeting held in Chicago March 14-16, especially the panel discussion concerning the training of machine operators and mechanics.

The reason for my interest in this is that I am a machine operator on the Great Northern. I have worked for the GN for

FIND TROUBLE SPOTS...



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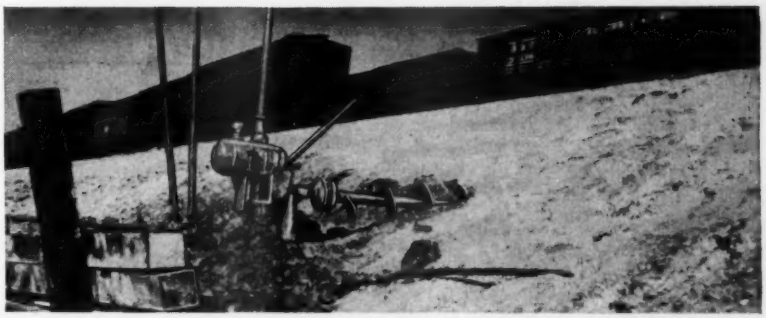

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STREET.....

CITY..... STATE.....

To the editor (cont'd)

almost 24 years, and I hope to work here until I am eligible for retirement.

The panelists for the manufacturers had many good points in presenting their side of the discussion, such as frequent changes of operators, etc. However, I have seen new machines come out with the wrong instruction books. Sometimes when an expert is sent out to train a new operator he does not know as much about the machine as the man he is supposed to train. I think if the manufacturers would put out instruction manuals comparable to the kind issued by the Caterpillar Tractor Company, also a serviceman's manual, they would be of more value than some of the experts they send out.

As for the large turnover in operators, it seems to me this could be avoided to a large extent if the carriers would not always lay an operator off at the first excuse they think of. When they purchase a new machine they should bulletin this machine, stating the time it is expected to be put in use and the pay scale. Then the senior operator has the opportunity to bid on this machine. He would be able to start on the machine when it is new and when the work is done he should be left on the job to make whatever repairs would be necessary to put it in shape for the next season's work; this in regards to the smaller machines, as they are used only for seasonal work.

In regard to the large machines, such as heavy earthmoving equipment and cranes, when these machines are to be taken out of service in the fall of the year there is usually a considerable amount of work that should be done on them, according to my experience. When they are sent to a shop for repairs the operator should be sent along. It seems to me that the men who operate this equipment should be the one to be entrusted with the repairing of the machine. He would be in position to know what is needed.

Also, if an operator knows that he will be working steady he will take more interest in the work and, therefore, do a better job. Also, the railroad would benefit by having its equipment in better condition and dependable operators. These are some of my thoughts as a machine operator.

Harold M. Sevig

Supply trade news (cont'd)

(Continued from page 10)

RACINE HYDRAULICS & MACHINERY, INC.—A new Defense Products Group has been organized within the company, according to an announcement by **John E. Erskine,** president. Mr. Erskine also announced the appointment of **Gordon Fuller** as head of the new group which will develop a long-term program of government work to supplement Racine's regular production of railroad and industrial tools and equipment.

SIKA CHEMICAL CORPORATION—Arthur K. Howe has been appointed to a position in the Technical Service Department of this company. Mr. Howe will work with architects, engineers and contractors on problems dealing with concrete construction and maintenance.

Obituary

Alvin D. Johnston, assistant sales manager of bolt products and manager of railroad sales, Sheffield Division, Armco Steel Company, died at Kansas City, Mo., on April 24 at the age of 42.

Association news

American Railway Engineering Association

A number of standing committees have scheduled meetings to be held in June. These include the following:

Buildings, June 16-17, Washington, D. C., including inspection trip to the RF&P's Potomac yard; Wood Bridges and Trestles, June 9-10, Madison, Wis., including inspection of the Forest Products Laboratory; Highways, June 24, Detroit, Mich.; Engineering and Valuation Records, June 9-10, Shoreham Hotel, Washington, D. C.; Water, Oil and Sanitation Services, June 7, Room 1218, Association Headquarters, Chicago; Economics of Railway Location and Operation, June 27-28, Penn-Sheraton Hotel, Pittsburgh, Pa., including inspection trip over the Pittsburgh & Lake Erie, visiting the road's new electronic retarder yard at Youngstown, Ohio; Maintenance of Way Work Equipment, June 13-14, Cleveland, Ohio, including inspection of the New York Central's research facilities; Special Committee on Continuous Welded Rail, June 24, Room 1218, Association Headquarters, Chicago.

Chicago Maintenance of Way Club

The annual meeting of the club was held at the Hamilton Hotel, Chicago, on April 25. The following officers were elected to serve during the ensuing year: President—John L. Perrier, division engineer, Chicago & North Western, who was advanced from first vice president; first vice president—Charles E. Weller, assistant engineer maintenance of way, Illinois Central, who was promoted from second vice president; second vice president—Merwin H. Dick, editor, *Railway Track and Structures,* who was advanced from executive secretary; executive secretary—Maurice S. Reid, assistant chief engineer-maintenance, Chicago & North Western. Joseph S. Kopec, assistant engineer, Milwaukee Road, was re-elected secretary-treasurer.

Directors elected for terms of two years are: Nathan E. Smith, principal assistant engineer, Milwaukee Road; Nicholas N. Dohrn, assistant to product engineer, American Brake Shoe Company; and Robert V. Dangremond, roadmaster, Elgin, Joliet & Eastern, Gary, Ind.

Metropolitan Maintenance of Way Club

At the annual meeting of the club, held at the Railroad Machinery Club, New York, on April 28, the following officers were elected to serve during the 1960-61 season: President—W. D. Almy, engineer maintenance of way, Central of New Jersey, Jersey City, N. J., who was promoted from first vice president; first vice president—J. W. Cummings, supervisor of work equipment, Delaware & Hudson, Colonie, N. Y., who was advanced from second vice president; second vice president—P. J. Harnish, regional engineer, Pennsylvania. Roderick Craib, associate editor, *Railway Age,* was re-elected secretary-treasurer.

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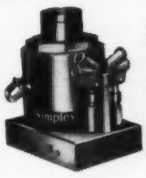

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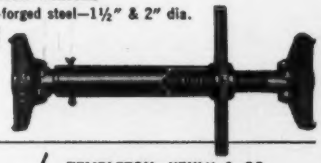

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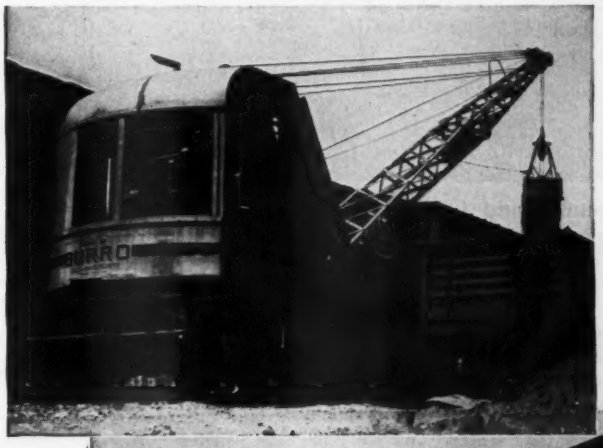

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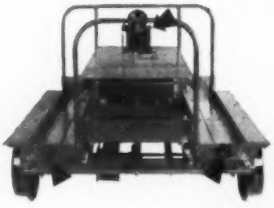

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Helps from Manufacturers

The following compilation of literature—including pamphlets and data sheets—is offered free to railroad men by manufacturers to the railroad industry. To receive the desired information, write direct to the manufacturer.

•

PREFABRICATED BUILDINGS. A new folder is available which describes and illustrates the new features incorporated in the Armco line of steel prefabricated buildings. Features described include sculptured wall panels, packaged interior wall panels and new roof slopes, roof spans and sidewall heights. Condensed data on the four types of buildings in the line are given. (Write: *Armco Drainage & Metal Products, Inc., Dept. RTS, Middletown, Ohio.)*

CRAWLER TRACTOR. A new 16-page booklet, Form 33553, is available which describes and illustrates the 335-hp Caterpillar D9 Series E crawler tractor. The booklet describes the operating and mechanical features of the machine with the aid of photographs, cutaway drawings and schematic diagrams. The three different transmissions available, direct drive, power shift and torque converter, are also described. Attachments available for use with the D9 are listed and matched equipment is pictured, including bulldozers, scrapers, two types of controls and a ripper. (Write: *Caterpillar Tractor Company, Dept. RTS, Peoria, Ill.*)

CONCRETE VIBRATOR. A circular is available which describes and illustrates the new Ingersoll-Rand 10V concrete vibrator. Designated Form 5278, the circular describes the operating and mechanical features of the unit, including the new 2½-in diameter vibrating head, multi-vane motor, continuous lubrication and throttle valve mechanism. The circular includes specifications of the new vibrator and a list of standard and optional equipment. (Write: *Ingersoll-Rand Company, Dept. RTS, New York 4.*)

SPOT CAR REPAIR SYSTEM. A new folder is available which describes and illustrates the RMC Spot Car Repair System. The folder explains the methods and equipment used in the system, including electric car pullers, pneumatic car stopper, hydraulic jacks, jib cranes and electrical and signal controls. Photographs, drawings and a schematic diagram are used to point out the features of representative installations. The principal advantages of the system are listed. (Write: *Railway Maintenance Corporation, Dept. RTS, Pittsburgh 30, Pa.)*

NON-SHRINK MORTAR. A list of 12 operations in which Embeco non-shrink mortar can be used is given in a four-page folder. Designated E-38, the folder illustrates each operation and gives the number of the bulletin containing detailed information concerning it. Operations listed include waterproofing walls and joints, caulking sewer pipe joints, patching concrete and grouting columns, anchor bolts and machinery. (Write: *The Master Builders Company, Dept. RTS, Cleveland 3, Ohio)*

ROLLING DOORS. The latest edition of the Kinnear catalog of rolling doors is now available. Designated Bulletin 104, it describes and illustrates the various types of steel and aluminum rolling doors, fire doors, steel and wood bifold doors, steel rolling grilles, metal counter shutters and steel and wood overhead doors. Construction details and specifications are given. Operating mechanisms described include those for manual, mechanical and power operation. (Write: *The Kinnear Manufacturing Company, Dept. RTS, Fields Ave., Columbus 16, Ohio.*)

CONSTRUCTION EQUIPMENT. The features of the LeTourneau-Westinghouse Model D Tournapull are described in a new 16-page, 4-color bulletin entitled "D Tournapull—money-maker on any size job." The bulletin, Form TP-434, is profusely illustrated with photographs, schematic drawings and diagrams which show the scraper in action and the component parts and construction of the machine. The advantages of using the Model D are pointed out with the aid of tables. Electric controls, brakes, maneuverability and roadability are explained in detail. Interchangeable attachments that are available for use with the machine are described and illustrated, including 11-ton rear dump, 10-ton side dump, 10-ton flat bed and 10-ton crane. (Write: *LeTourneau-Westinghouse Company, Dept. RTS, Peoria, Ill.)*

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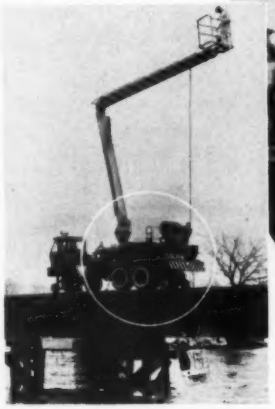

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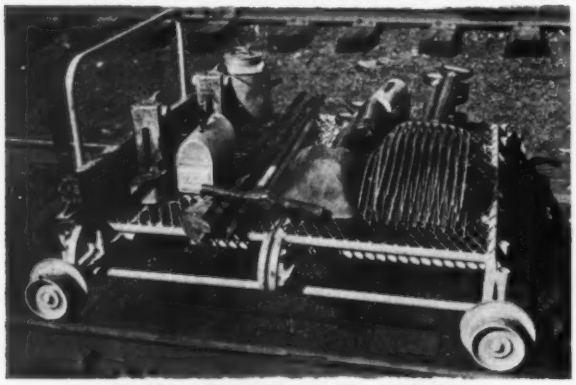

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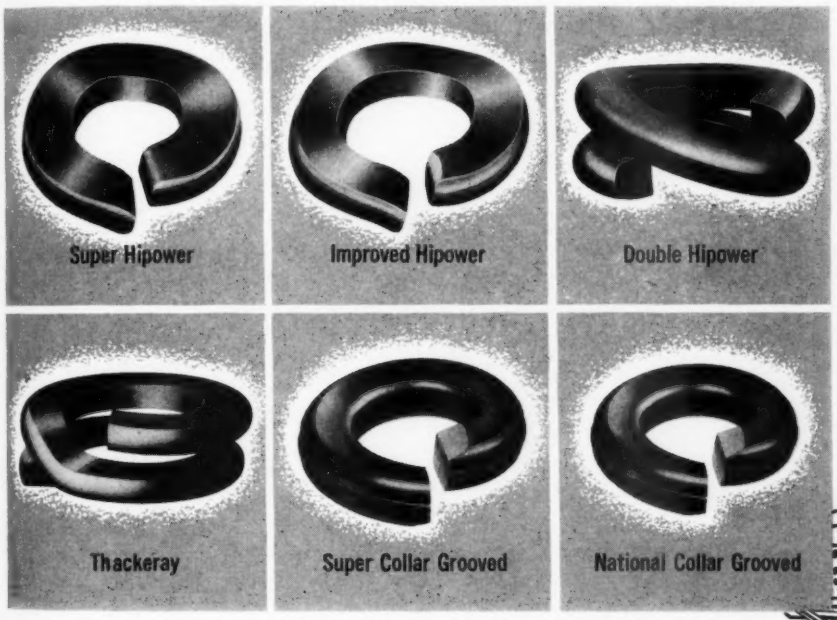

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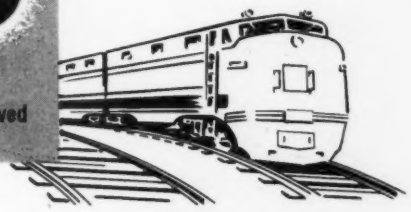

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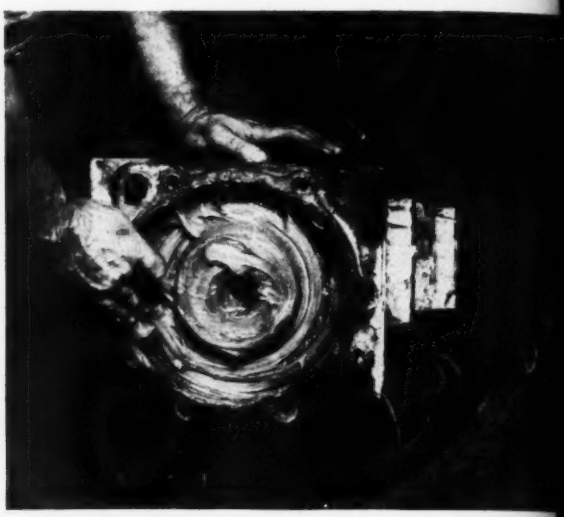

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